Interplaying mechanisms in the implementation of Dementia Care Mapping for delivering Person-centered Care to older adults in nursing home settings.

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ABSTRACT

Purpose:

This research lays out a study that explores the interplay among the elderly care context, the content of Dementia Care Mapping, and the *Process of Implementation*. The research aims to identify the most influential constraining and supporting mechanisms in realizing Dementia Care Mapping's central aim of monitoring the individual needs and well-being of older adults suffering from dementia in the Netherlands.

Methods:

To present our approach, we describe a qualitative cross-case analysis of five nursing homes using Dementia Care Mapping. Qualitative data includes observations and semi structured interviews. Actors included were: directors of facilities (N=2), project leaders (N=2), nurses and head nurses (N=4), licensed 'mappers' of the Dementia Care Mapping process (N=4) and family members/informal caregivers of persons with dementia (N=2). The Consolidated Framework of Implementation Research provided theoretical grounding for the conceptual framework that guided this study.

Results:

With the use of the Consolidated Framework of Implementation Research and our conceptual framework, data collection is guided, data coded and analyzed and findings are presented in a structured comprehensive manner. Results of the cross-case analyses are presented in a matrix, thereby identifying the interplaying mechanisms of Dementia Care Mapping implementation.

Implications and Limitations:

The most important contribution of this research is its novel understanding of factors interplaying when Dementia Care Mapping is implemented for the delivery of Person-centered Care. Furthermore, the interplaying mechanisms identified in this study help to: 1) understand implementation of such tools in the health care context, 2) explore Dementia Care Mapping's complexity regarding heterogeneous results in literature and 3) understand Dementia Care Mapping's contribution to the four constructs of Person-centered Care.

Practical implications:

This study's findings provide a better understanding for management of the interplaying mechanisms constraining and supporting the realization of Person-centered Care through Dementia Care Mapping. The identification of these mechanisms provides a guide in developing action plans for implementation in the elderly care context.

Originality:

This research is the first study to identify interplaying mechanisms constraining and supporting Dementia Care Mapping implementation, thereby answering recent calls in literature to fill this gap.

INTRODUCTION

In our society, the rising number of people suffering from the disease of Alzheimer, or dementia is rising. For instance, in all the Dutch nursing homes the number of people is diagnosed with the disease is 53% (Van de Ven et al., 2014), and it is estimated that worldwide 81 million people will suffer from dementia in 2040 (Ferri et al., 2005; Prince et al., 2009). Besides the far-reaching effect on the persons that are diagnosed with dementia, affecting the quality of their life significantly, it also becomes a challenge for caregivers to deal with the extra neuropsychiatric symptoms like depression and agitation (Van de Ven et.al., 2014). With an aging society, we can state that providing personalized care on a professional level for people suffering from dementia is an enormous challenge for the future (Vellas et.al. 2012).

Person-centered Care (PCC) is currently considered the best type of care for patients diagnosed with dementia, (Brooker, 2007, Edvarsson et al., 2008). Two decades ago, PCC was adapted in dementia care by Kitwood (1997). Since that adaptation, much has been written about PCC and dementia care, seemingly making it an established approach for the delivery of health care with positive outcomes like satisfaction with care, involvement in care, feeling of well-being, and the creation of a therapeutic environment (McCormack & McCance, 2006). One of the most acknowledged methods in the literature, as well as in practice that supports the delivery of PCC is Dementia Care Mapping (DCM) (Quasdorf et al., 2017).

Dementia Care Mapping is described as a tool used for observation in dementia care since the early 1990's. It is an instrument to deliver PCC, as well as a tool to monitor the experienced well-being of older adults that cannot easily communicate this anymore themselves (Halek et al., 2013; Quasdorf et al., 2017). Kitwood (1997) stated that the instrument is '*a serious attempt to take the standpoint of the person with dementia, using a combination of empathy and observational skill'* (p. 4). The observational method has its foundation in the observation of the well-being of individuals, including cycles of preparation, observation, analysis, feedback and action planning (Innes, 2003). Over the years, the popularity of DCM delivering PCC has grown and many caregivers have used the tool to assist in the delivery of Person-centered Care to people with dementia, despite criticism in literature (Brooker, 2005).

Because of the growing interest in the contribution of DCM in delivering PCC, DCM's effectiveness has been examined frequently over these past twenty years (Surr, Griffiths & Kelly, 2018). However, complexity of the tool caused heterogeneous outcomes (Chenoweth et al., 2009; Rokstad et al., 2013; van de Ven et al., 2014; Quasdorf et al., 2017). For instance, Chenoweth et al. (2009) found a decrease of agitation of patients as a result of DCM, while Rokstad et al. (2013) did not identify this effect. Van de Ven et al. (2014) did not even identify benefits resulting from the DCM method.

Implementation of health-based interventions are complex and there is limited understanding of the effectiveness, even though the importance of the understanding of facilitators and barriers is emphasized on (Grol, 1997). Especially implementation of a complex intervention (such as DCM) is under the influence of numerous factors (Damschroder et al., 2009; Chaudoir, Dugan & Barr, 2013). The comprehensive Consolidated Framework for Implementation Research by Damschoder et al. (2009) is a useful guiding tool to evaluate the implementation of an initiative that transforms practice, such as DCM (Keith et al., 2017). In this research, we use the CFIR to guide the collection, coding and analyzing of the data.

In the CFIR (Damschroder et al., 2009) characteristics of factors that influence implementation relate to five categories: 1) *Intervention Characteristics*, 2) *Outer Context*, 3) *Inner Context*, 4) *Characteristics of Individuals*, and 5) *Process*. Factors that relate to the *Inner Context* (like structural characteristics of the organization, culture and leadership style) are considered especially important for the implementation of DCM (Quasdorf & Bartholomeyczik, 2017).

Furthermore, because of the shifted vision from a medical-oriented approach towards the PCC approach (Brooker, 2007), it is argued that professional care for people suffering from dementia should move to an environment that offers a better balance between living, well-being and care (De Rooij et al., 2012). In this respect, nursing homes constitute a context worth examining the mechanisms interplaying in the DCM Implementation Process, since only limited research has been conducted for this context (De Rooij et al., 2012) and the need for improvement is felt. Earlier research on Person-centered Care in the elderly care context demonstrated strong feelings of satisfaction for the patients as well the caregivers (Schoenmakers et al., 2009).

These arguments led to the following research question:

- *What are interplaying mechanisms in the implementation of Dementia Care Mapping that influence DCM's contribution to delivering Person-centered Care in the elderly care context?*

LITERATURE REVIEW

This section consists of three chapters. The first chapter is an introduction to Person-centered Care, the second chapter an introduction to Dementia Care Mapping and the third chapter is devoted to implementation theory in the health care context. As a result of this theoretical review a conceptual framework will be presented functioning as a theoretical starting point for this study as well as a guideline for the research design.

Person-centered Care

Person-centered Care is an essential component of delivering high quality professional healthcare and therefore, highly recommended in training programs of healthcare providers (Lauver et al., 2002). Stewart et al. (1995) identified six different dimensions of PCC being: 1) understanding the person as a whole, 2) exploring the experience of the illness, 3) agreeing to the plan of health care management, 4) agreeing to the plan on a preventing level, 5) a realistic perspective of personal limitations and 6) a focus on the relationship with the doctor and the patient. The relationship with the patient and the caregiver is seen as the most important aspect of providing PCC (Stewart et al., 1995). By having an interpersonal relationship as an individual with the caregiver, control is being delivered to the patient (Morgan & Yoder, 2012).

In the PCC framework, developed by McCormack and McCance (2006), four constructs of PCC were identified, being: 1) *prerequisites* (meaning attributes of nurses), 2) *the care environment* (the context of care delivery), 3) *person-centered processes* (the range of activities) and 4) *outcomes* (results of PCC). For the care of patients with dementia, PCC seems even more important, since neglecting the psychosocial needs of a patient suffering from dementia can lead to a loss of self-care, less social engagement and damage of a person's social relationship with other human beings (Brooker, 2007, Chenoweth et al., 2009). Person-centered Care is seen as a holistic alternative for the conventional practice of health care and can help to protect a patient's personhood, making this method a plausible form of delivering professional health care to people suffering of dementia (Edvardsson et al., 2008). While some literature reported reduction of agitation and anxiety for persons with dementia (Chenoweth et al., 2009), there is hardly literature available describing the influence of PCC for the quality of life for persons suffering of dementia.

With the rise of people diagnosed with dementia, healthcare systems, and especially the elderly care context, face challenges. One of these challenges is the delivery of PCC for the older adults that have to deal with the chronic disease of dementia (Lagger et al., 2010). One of the approaches that gained international recognition as a tool to deliver PCC in this context is DCM (Quasdorf et al., 2017).

Dementia Care Mapping

The development of Dementia Care Mapping (DCM) started with pioneering work of Professor Tom Kitwood on Person-centered Care and his book: *Dementia reconsidered* (1997). To summarize the method, a qualified observer (referred to as: mapper) observes five participants with severe dementia symptoms continuously over a period. In every time frame, normally five minutes, the experienced behavior of the participant is being coded, with which the mapper can assess this person's well- or ill-being, as well as their quality of life (Brooker, 2005).

Being a structured intervention with multiple components, aiming to deliver Person-centered Care, DCM has been regularly updated (Brooker & Surr, 2006). With the eight' version research has been conducted to assess the impact of DCM on quality of life, agitation and challenging behavior such as aggression, screaming and apathy (Reuther et al., 2012; Dichter et al., 2015). Since limited research has been conducted in the field of implementation of DCM, we zoom in on three specific observational studies that provided the most striking mixed results during three international trials. In a study in Australia by Chenoweth et al. (2009) reduction of agitation was found, but no effects on challenging behavior. In a Dutch trial, usual dementia care was compared with DCM, and no effects on agitation were found. However, the study did establish a negative effect on persons' challenging behavior (Van de Ven et.al. 2013). Similar results were found in a study by Rokstad et al. (2013). In this study in Norway no effect on primary outcome agitation was found, but the study did find a positive effect of DCM on the quality of life of people suffering of dementia symptoms. An overview of these studies is presented in Table 1:

Author	*Country*	*Setting*	*Results*
Chenoweth et al. (2009)	Australia	Five care facilities	- Reduction of agitation; - No effects on challenging behavior.
Van De Ven et al. (2013)	The Netherlands	Five nursing homes (13 units)	- No effects on agitation; - Negative effect on persons' challenging behavior.
Rokstad et al. (2013)	Norway	Three nursing homes	- No effect on agitation; - Positive effect of DCM on quality of life.

Table 1: Overview of observational studies

The mixed outcomes of the earlier studies have made researchers question the implementation of DCM. Perhaps the heterogeneous results were not so much a result of failure of the DCM concept, yet the consequences of an unsuccessful implementation (van de Ven et al., 2014). Quasdorf et al. (2017) found that the way the DCM implementation is realized, highly influences effects of the PCC on persons suffering from dementia. Organizational contextual factors, like stable and well-functioning teams, open communication structures and positive attitudes towards DCM are considered influential factors for successful implementation (Quasdorf et al., 2017). Also, the cultural context and dementia friendliness have been suggested to play a critical role (Heller, 2003; Rokstad et al., 2013).
In short, no evidence has been found yet in literature whether: 1) the concept DCM fails to deliver PCC, or 2) the Implementation Processes of DCM as a tool failed, making research in identifying interplaying mechanisms in implementing DCM required.

Implementation

Implementation is defined as the system of processes intended to get an intervention into use within an organization (Rabin et al., 2008). Klein and Sorra (1996) define implementation as the means by which an intervention assimilates into the organization. Implementation is the critical gateway between the decision of an organization to adopt the intervention chosen (i.e., DCM), and the use and creation of routines for the intervention (Klein & Sorra, 1996). Implementation can be considered to be a specific period, where actors become proficient and consistent in the use of an innovation (Klein & Sorra, 1996). Pettigrew and Whipp (1992) explain three essential dimensions of strategic change: context, process and content. Their classification formed the basis of many later frameworks on implementation effectiveness. *Context* is seen by Pettigrew and Whipp (1992) as the WHY of strategic change. Implementation is entwined with its context (Davidoff et al., 2008). Context is the environment in which practice has taken place and entails factors like for example culture, organizational components and leadership (Stetler et al., 2007).

Process is the HOW of strategic change and their last dimension, as the WHAT of strategic change is *Content* (Stetler et al., 2007). The model of Pettigrew and Whipp (1992) is widely used to analyze change in organizations (Iles & Sutherland, 2001) and the model has helped identifying factors that relate to 'successful organizational change', or implementations, also in healthcare (Pettigrew, Ferlie, McKee; 1992).

Especially in the healthcare context, the rate of successful implementations is lower than 50%, with organizational change seen as the main influencer of the failure (Alexander, 2008). By organizational change, the field refers to any modification in organizational composition, structure, or behavior (Bowditch & Buono, 2001). Furthermore, interventions found effective in studies very often fail to be

translated into meaningful outcomes and it is even estimated that two-thirds of organizations that implement change fail. (Damschroder et al., 2009).

A comprehensive implementation framework, based on the work by Pettigrew and Whipp (1992), is the Consolidated Framework for Implementation Research (CFIR) by Damschroder et al. (2009). Damschroder et al. (2009) combined nineteen implementation theories into their Consolidated Framework for Implementation Research. The CFIR can be used to explain implementation success and has the potential to identify barriers and facilitators of the Implementation Process and therefore can guide the selection of change/implementation strategies (Damschroder & Hagedorn, 2011; Breimaier, Heckemann, Halfens & Lohrmann, 2015). The concepts in the CFIR lay the foundation for a guide that is theory-grounded but that has practical benefits for systematically assessing barriers and facilitators to the successful dissemination of innovation. The CFIR has been used in more than 300 published studies and serves as a benchmark for the comprehensiveness of implementation strategies (Patterson & Holdford, 2017).

The CFIR consists of the following five domains, derived from the dimensions of Pettigrew and Whipp (1992): 1) *Intervention Characteristics*, 2) *Outer Setting*, 3) *Inner Setting*, 4) *Characteristics of Individuals* and 5) *Process*. These domains consist of 39 underlying concepts that can influence change (Breimaier, Heckemann, Halfens & Lohrmann; 2015, Damschroder et al., 2009). Furthermore, the CFIR has been applied in research to function as an interview guide, describing factors that were able to explain variation in the success of the implementation in a healthcare context (Damschroder & Lowery, 2013). In this study, the CFIR provides the starting point for the conceptual framework that will be introduced in the next paragraph. With the conceptual framework being the theoretical foundation for this study, the CFIR highly contributed this study in answering this study's research question.

Conceptual framework of interplaying mechanisms of implementing DCM to deliver PCC in the elderly care context

Despite dementia care mapping being recognized as a tool to deliver Person-centered Care, only a few studies tried to explain the relationship between DCM, PCC and the quality of life of persons suffering from dementia symptoms. No consensus has emerged about whether implementation or intervention mechanisms are holding back converging results of DCM on the quality of life of these persons. In addition, the literature lacks an integration of DCM knowledge and organizational change insights.
By exploring the mechanisms at work in the implementation of DCM and their interplay, this research aims to contribute to a better understanding of the observed implementation and performance problems of DCM in delivering PCC. Identifying the facilitating and constraining mechanisms in the implementation of Dementia Care Mapping and their interplay can contribute to clinical practice, thereby hoping to ease the burdens for the growing number of older adults that have to deal with

dementia. To develop such insights for the elderly care context in the Netherlands, a sensitizing theory-based conceptual framework has been constructed for our explorative study (Figure 1). By incorporating factors demonstrated in the CFIR by Damschroder et al. (2009), the framework increases the relevance of this study to inform future implementation practice of DCM in the context of this research (see Keith et al., 2017). This conceptual framework provides this research with a theoretical starting point, as well as a guideline for the research design.

The conceptual framework consists of five categories, or domains, derived from the CFIR (Damschroder et al., 2009). The WHAT is the (un)intended *Intervention Content*: DCM. Throughout the implementation the eventual content can differ from the initially intended content, explaining the two types of content. The arrow is the HOW, defined as the Implementation Process. The WHY is the context of the framework. However, the WHY is divided in three parts. The largest triangle of the conceptual framework is the *Outer Context*. Inside this triangle lies the *Inner Context*. The *Inner Context* can be seen as the organization that operates in the *Outer Context* of elderly care. Inside this *Inner Context* lies the third triangle: *Characteristics of Individuals*. This can be contemplated as individuals that operate in the *Inner Context*, and therefore likewise in the *Outer Context*.

The framework portrays the Implementation Process over time. In these five domains of the framework mechanisms interplay reciprocally, eventually influencing implementation. Interplaying mechanisms are visualized with the help of rears between the five different categories.

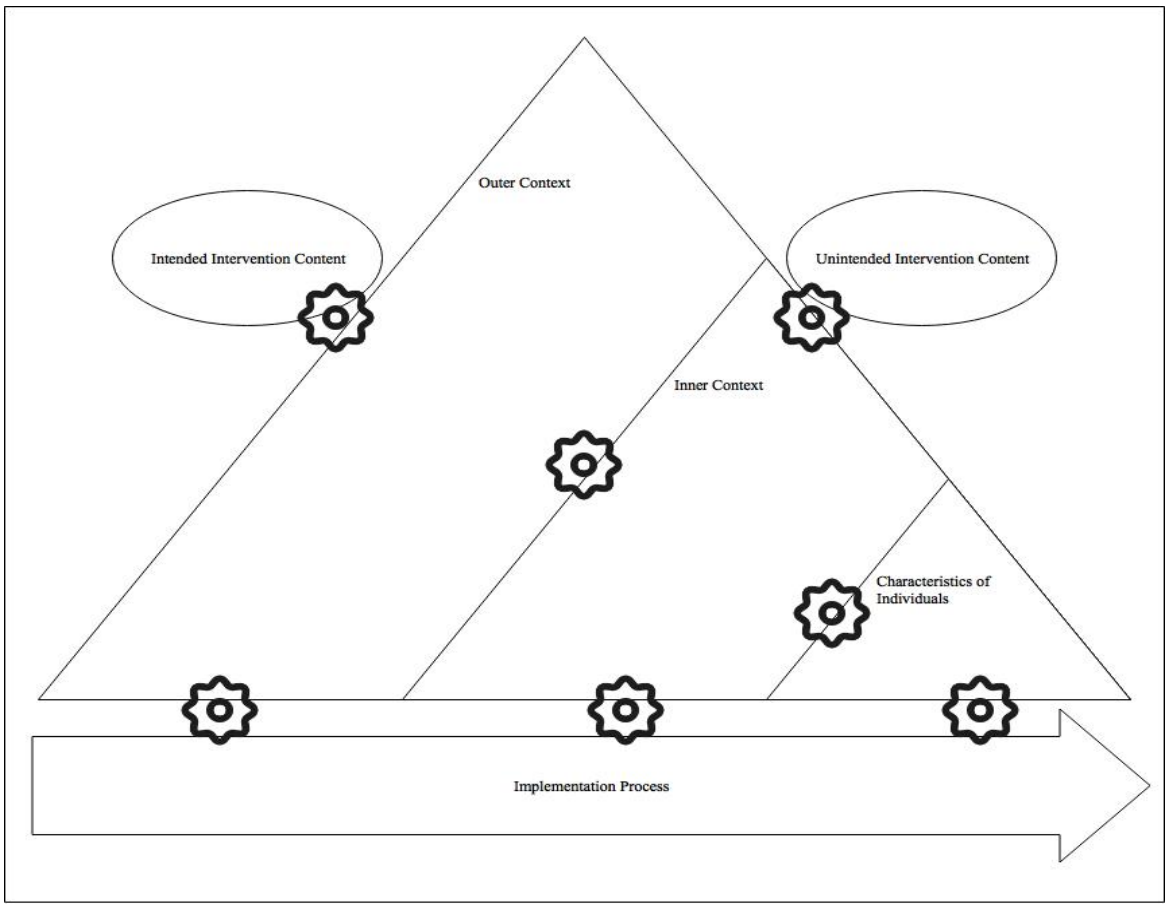

Figure 1: Conceptual Framework of interplaying mechanisms of implementing DCM to deliver PCC in the elderly care context

METHOD

The literature review showed that the few available studies of the effects of PCC delivery through DCM for the persons with dementia generated heterogeneous results, probably because of differences in implementation. These implementation mechanisms and their interplay have never been examined in the chosen context of this research, so we do not know how DCM may be implemented in a way that it contributes to Person-centered Care. Our research focus is on identifying and understanding interplaying mechanisms that facilitate or constrain the implementation of DCM-guided delivery of Person-centered Care. For understanding and identifying these mechanisms, qualitative research is suited best, since rich explanations and underlying relationships need to be understood (Eisenhardt, 1989). The choice for qualitative research is furthermore substantiated since this method has the ability for capturing potentially relevant contextual factors and complexity (Yin, 2003). Additionally, qualitative research is well suited for uncovering links among concepts and behaviors and well suited for generating and refining theory (Miles & Huberman, 1994).

Research context and design

The research context is elderly care in the Netherlands. The Netherlands was once rated first in a ranking of countries taking care of its older adults (Edwards, 2004). However, the shift from a welfare state to a participation society leads to major challenges in policymaking, services, education and research for organizations and individuals (Smits et al., 2013). In 2011, 6% of people aged 65 and older received residential care, with approximately 165.000 people living in nursing homes (Klerk & Ross, 2011; Smits et al., 2013).

The elderly care context is the only context in the Netherlands in which DCM is sufficiently used to learn from the experiences. This study focused on five elderly care facilities. The following criteria were applied in selecting these elderly care facilities:

- DCM must be in use;
- Variation across sites in the duration of use of DCM;
- Variation across sites in the size of the selected facilities.

For this study a case study design was used, since an in-depth and multifaceted understanding in the real-life context can be made (Crowe et al., 2011). Multiple cases will be covered in this study, making a cross-case analysis possible (Yin, 2003). The selected cases are presented in Table 2.

Case	*Size organization*	*Size facility*	*Specialism unit*	*Duration of DCM use at facility*
FAC1	Medium: - 1000 employees - 700 volunteers - 1000 clients - 11 facilities	Large: - 87 apartments (somatic care) - 156 clients in small scale nursing homes (psychogeriatric care)	- Somatic care - Psychogeriatric care	2 years
FAC2	Large: - 3400 employees - 2400 volunteers - 25 facilities	Small: - 20 apartments (somatic care) - 39 clients in small scale nursing homes (psychogeriatric care)	- Somatic care - Psychogeriatric care	Started at the time of data collection
FAC3	Medium: - 13 facilities - 1100 employees - 2500 clients	Medium: - 104 clients in small scale nursing homes (psychogeriatric care)	- Psychogeriatric care	2 years
FAC4	Large: - 3400 employees - 2400 volunteers - 25 facilities	Medium: - 81 apartments (somatic care) - 60 clients in small scale nursing homes (psychogeriatric care)	- Somatic care - Psychogeriatric care	2 years, recently restarted implementation
FAC5	Small: - 30 employees - 14 clients	Small: - 14 clients (psychogeriatric care)	- Psychogeriatric care	5 years

Table 2: Selected elderly care facilities

Having multiple different care facilities in this research ensures the required variation between the cases and allows for comparisons that are important in explorative research (Guba & Lincoln, 1989). We assumed the facilities differed in the degree of success of implementation of DCM. Success of implementation in this research is defined as the degree of which opportunities and value of DCM are captured, leading to improved well-being of person with dementia and staff and lower agitation (Halek et al., 2013).

In the selected facilities, the research focused on the key groups of actors in the Implementation Process next to the patients with dementia. The actors that were included in this research were: directors of facilities (N=2), project leaders (N=2), nurses and head nurses (N=4), licensed ‘mappers’ of the DCM process (N=4) and family members/informal caregivers of persons with dementia (N=2).

By interviewing these different actors inside the five different facilities, the research collected enough data that covered similar material, and therefore allowed cross-case comparisons (Miles & Huberman, 1994). The researcher also made an effort to spend time in the facilities to observe ongoing operations regarding implementation and the use of DCM, as well as to better understand the patients' own perspective. The latter is of critical importance in interpreting the data with an eye to the aim of DCM. The data collection took place in two separate periods. The first round of interviews took place in December 2017; the second round of interviews took place in February 2018.

Facility	*Data Source*	*Informant for collection of the data*	*Procedure of the collection of the data*	*Time of collection of the data*	*Number interviews*
FAC1	- Semi structured interviews - Observations	- Nurse - Informal Caregiver - Mapper - Project leader	- Interviews by researcher - Observations during visit of facility	December 2017	N = 4
FAC2	- Semi structured interviews - Observations (during training session)	- Team manager - Head nurse - Project leader/mapper	- Interviews by researcher - Attending team training	December 2017	N = 3
FAC3	- Semi structured interviews - Process documents	- Team manager - Informal caregiver - Mapper	- Interviews by researcher - Assessed by researcher from management	December 2017	N = 3

Table 3: Data Collection in the selected cases

Table 3: Data Collection in the selected cases (continued)

Facility	*Data Source*	*Informant for collection of the data*	*Procedure of the collection of the data*	*Time of collection of the data*	*Number interviews*
FAC4	- Semi structured interviews - Process documents	- Director - Head nurse - Nurse	- Interviews by researcher - Assessed by researcher from management	February 2018	N = 3
FAC5	- Semi structured interviews	- Director - Mapper/nurse	- Interviews by researcher	February 2018	N =2

Data Collection methods

Diverse data was collected to identify mechanisms of DCM implementation. This was done by collecting primary data, as well with the use of secondary data. We collected primary data by several methods in the research, being in-depth interviews and observations.

Secondary data was collected by analyzing documents on DCM, its use and outcomes, and the implementation trajectories. This secondary data consisted of information flyers announcing DCM for informal caregivers, multiannual plans for PCC and documentation about moving to a nursing home. This secondary data consisted of approximately 35 pages text. Secondary data assisted the researcher in a deeper understanding of the primary data and assisted in formulating probe questions during the interviews.

The use of these different types of data collection is providing the research a composition of propositions, which is strong (Eisenhardt, 1989). The insights the cases provide was contrasted to and compared with the literature existing already and value to literature will be made by the research after comparing the insights with the existing literature and adding new propositions. Inter-subjectivity agreements are important for research and can be improved by measuring reliability, validity and controllability (Van Aken et al., 2012).

Controllability, reliability and validity are considered the most important research-oriented quality criteria (Swanborn, 1996). In this research, we aimed to ensure controllability through documenting the research process throughout the research process with notes, memos and regular updates via e-mail to the supervisors of the research, to make a detailed description of the study and making it controllable (Van Aken et al., 2012).

Reliability is the second research-oriented quality criteria and means that there are independent characteristics that can be replicated in other studies (Yin, 2003). In this study, reliability is ensured through recording, with permission of the interviewees, the interviews. Interviews could therefore be re-listened, facilitating a more observing position for the interviewer, as well as facilitating the possibility to check no important elements were missed.

Instrument biases are controlled in this research by using expert interviews, observations and analyzes of literature, on the grounds that these different research instruments can correct and complement other instruments (Van Aken et al., 2012). Responder biases were prevented by selecting interviewees from different departments of the facilities. Above that, they were selected randomly to have a less distorted picture (Van Aken et al., 2012). Situation was controlled in the data collection by conducting the interviews in different times and with the absence of other participants (Van Aken et al., 2012).

Validity (conduct, internal and external validity) is the third research-oriented quality criteria for this research, meaning that the results of the study are justified because of the way they are generated (Van Aken et al., 2012). Triangulation, using multiple research instruments and combining them, (Yin, 2003), was used in this study to improve construct validity. Plausible competing explanations were tried to be avoided to maintain internal validity for this study and external validity was aimed to be maintained by having generable results, realized by studying multiple objects in the context of this study (Van Aken et al., 2012). An overview actions to ensure inter-subjectivity agreements for this study can be found in Table 4.

Research Oriented Quality Criteria:	*Actions taken to ensure:*
Controllability	- Documenting research process with notes, memos and regular updates via e-mail
Reliability	- Recording (with informed consent) of the interviews
Instrument Biases	- Multiple research instruments
Responder Biases	- Random selection of interviewees from different departments
Situation	- Conducting interviews in different times - Absence of other participants
Validity (construct)	- Triangulation
Validity (internal)	- Avoidance of plausible competing explanations
Validity (external)	- Generable results by studying multiple objects in context

Table 4: Overview actions for Research Oriented Quality Criteria

Interviews

To have multiple views and insights on the mechanisms interplaying in the implementation of Dementia Care Mapping in the elderly care context, fifteen semi-structured interviews were conducted. The interviews were semi-structured, leaving the exploratory character of this study intact and therefore giving the respondents the possibility to discuss mechanisms concerning DCM implementation that were relevant for them specifically. The interviews were approximately 45 minutes to 75 minutes long and all the respondents signed a form of informed consent. The audio recordings of the interviews were transcribed verbatim.

The interview protocol was designed following the conceptual framework (Figure 1) which is based on the CFIR by Damschroder et al. (2009), thereby ensuring the gathered data in the interviews related to the research question of this study.

Next to the formal interviews, the researcher conducted several informal interviews with actors, which provided additional information about the context of the particular facility. This helped to clarify answers in the semi-structured interview and provided additional background information to support the data analysis. The first two interviews functioned as pilot interviews, which allowed us to refine and adjust the developed interview protocol.

Documents of Dementia Care Mapping implementations/experiences (secondary data)

Documents of experiences and implementation reports of DCM provided this study with data to identify existing mechanisms at play of DCM implementations in the elderly care contexts and helped interpreting the primary data.

Data Analysis

Since data analyzing is at the heart of building theory from case studies, but also the most difficult part, we stuck as close as possible to the method of Eisenhardt (1989). For all the individual cases of the research we conducted a within-case analysis by reading, coding and interpreting them separately. Within case exploring and explaining was also done with the secondary data, to build an understanding of the primary data (Brown & Eisenhardt, 1997). The coding was done in both an inductive and deductive manner. The deductive codes were based on the CFIR (Damschroder et al., 2009), the inductive codes following coding methods by Saldaña (2015). After a first cycle of analyzing the data, some CFIR codes were adapted to fit the context of DCM. Furthermore, some codes from the CFIR were removed, since they were not reflected in the fifteen transcripts. This coding led to the construction of a codebook with 42 concepts, divided under 5 main categories (Appendix III: Codebook). For an example of the categorization see Table 5. For the data analysis, qualitative data analysis software Atlas.ti.8 was used.

Category	*Concept*	*Sub concept*	*Quote*
Inner Context	Implementation Climate	Goals & Feedback	"Clearly formulated goals? Not really. Especially employees. It has to become a goal for them as well. Teams do not do enough for things like: What do we want to accomplish this year with DCM?"

Table 5: Example of the categorization.

RESULTS

In this section, we present our detailed analysis of the studied cases and identify factors that influence the implementation of DCM. We structure our findings based on the cases and follow the five categories established in the codebook (Appendix III). The concepts that influenced implementation most are represented in five separate within-case analyses. We present these findings by describing concepts per category that were influencing DCM in the particular case. For a visualization of the division of categories, concepts and sub concepts see Figure 2.

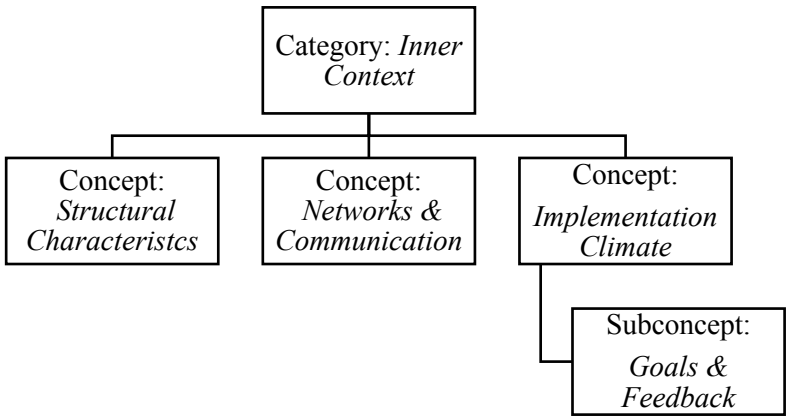

Figure 2: Visualization of the division of categories, concepts and sub concepts

First, we provide the within case analysis of each case, then we show the cross-case analysis, and we finish the section with the consequences for our initial framework. During the analysis of the cases, we were led by the five categories as they are presented in the conceptual framework (Figure 3), which is derived from the CFIR by Damschroder et al. (2009).

1. Intervention Content. Features of DCM that might influence implementation.
2. Outer Context. Features of the Outer Context or environment that influence implementation.
3. Inner Context. Features of the implementing organization that influence implementation.
4. Characteristics of Individuals. Features of individuals involved in the Inner Context that influence implementation.
5. Implementation Process. Includes strategies and DCM Process Components that influence implementation.

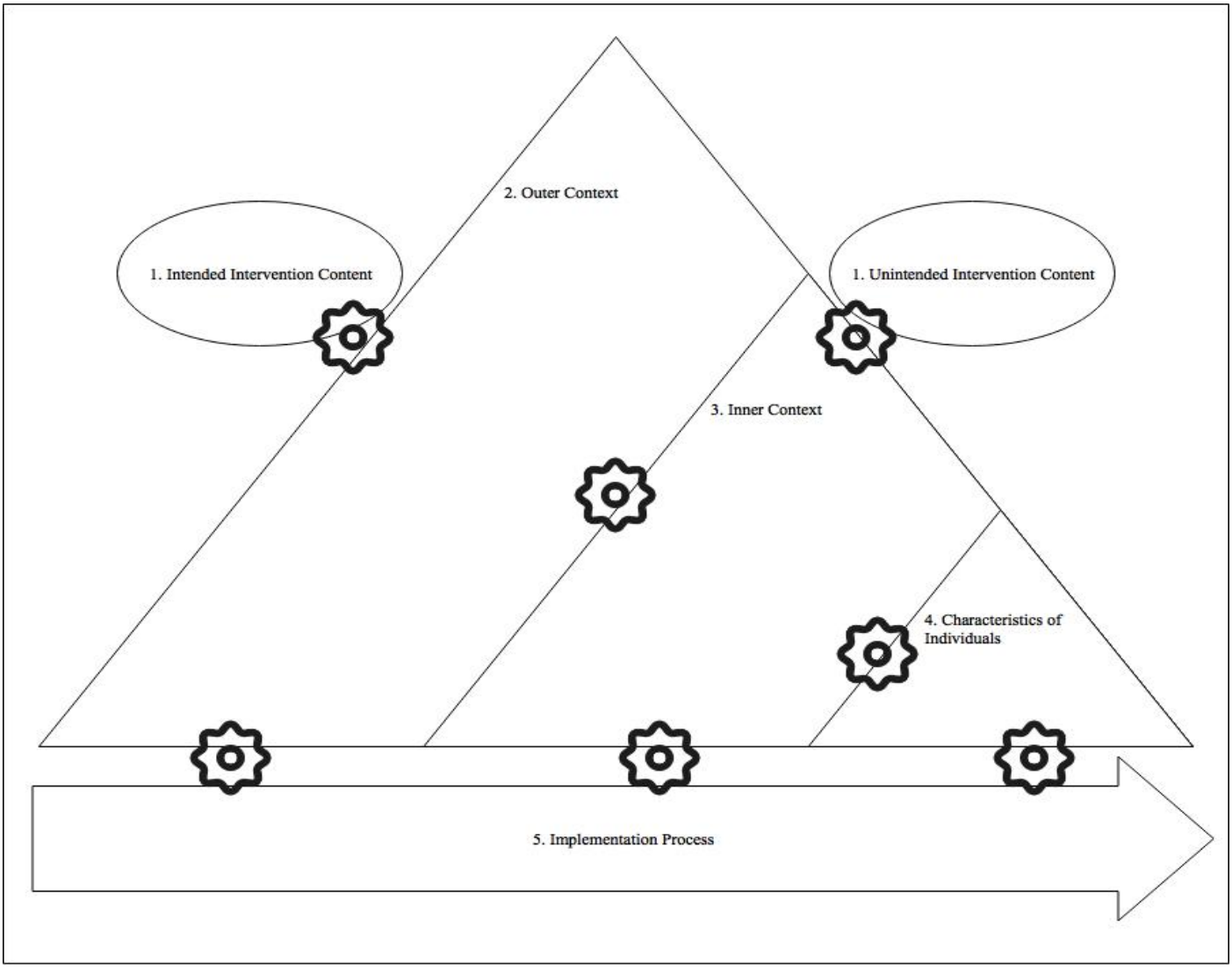

Figure 3: Conceptual Framework of interplaying mechanisms of implementing DCM to deliver PCC in the elderly care context

Within-case Analysis

Case FAC1:

FAC1 is a large facility that is part of a medium sized organization (see Table 2). The facility had 2 years of experience with DCM at the time of the study.

Intervention Content

In this facility, the *Intervention Content* (i.e. DCM), or the WHAT of change (Pettigrew & Whipp, 1992), has the purpose to be used when there are problems with the person with dementia. A nurse explains: "*To be honest, I have to say that DCM is used when we have troubles with a patient… DCM is involved when we encounter problems, yes."* (FAC1-Nurse). A colleague who is a mapper for DCM had a similar story: *"Here DCM is mostly applied to locate the origin of the problem behavior"*. (FAC1-Mapper). This refers to the concept *Purpose DCM*: the reason and purpose DCM is used in a particular facility. Both practitioners see DCM as a tool to cope with problems. However, the project leader thinks of DCM differently, and perceives DCM as a part of the overall vision to deliver Person-centered Care. The project leader states: "*Actually, DCM is a component of person centered care. DCM is a tool to make this measurable."* (FAC1-Projectleader). This perception of DCM is more than just the perception of the other interviewees that DCM is a tool used for difficult cases of misunderstood behavior of persons with dementia. Instead, DCM becomes an instrument to control performance, i.e. make performance in terms of PCC measurable.

Inner Context

In FAC1, multiple concepts of the category *Inner Context* influenced implementation of DCM. The first concept we observed is the concept of *Implementation Climate. Implementation Climate* is referred to as: 1) the absorptive capacity for change, 2) the shared receptivity of involved individuals to DCM, and 3) the extent to which the use of DCM will be rewarded, supported, and expected within their organization (see Damschroder et al., 2009). This concept has a negative influence for the use of DCM at FAC1.

This stems from multiple sub concepts of *Implementation Climate*. Firstly, the project leader explained a low *Tension for Change*: *"Employees say they do not have time, or that they already perform their tasks in the expected way."* (FAC1-Projectleader). The mapper describes the *Tension for Change* as: *"They don't really know what DCM is for, and what the value of DCM is."* (FAC1-Mapper).

Secondly, *Relative Priority* (i.e. the shared perception of the importance of DCM in the facility) is also negatively influencing the *Implementation Climate*. Mappers observe resistance with nurses, which do not see the purpose of the mapping, and experience active/open resistance through colleagues that do not attend feedback sessions, which are part of the mapping process.

Thirdly, *Compatibility*, defined as the fit between meanings and values attached to DCM and individuals and the fit of DCM with existing workflows in the *Inner Context*, was also very low, therefore negatively influencing implementation. As explained by a mapper: *"And then I notice resistance. They think: Why are you interfering with our work? At least, that is the feeling I get. Or they think I do not know the people they work with. What do you know about it?"* (FAC1-Mapper).

Furthermore, the fourth sub concept negatively influencing the *Implementation Climate* is the lack of *Goals & Feedback*. No clear goals had been set and teams have no goals how to use DCM in their job routine. *"Trajectories are put in place, but insufficiently tested and measured whether goals are accomplished."* (FAC1-Projectleader).

As a result of this negative *Implementation Climate*, *Readiness for Implementation* is low, which lead to a negative influence on the implementation of DCM. Observed sub concepts influencing *Readiness for Implementation* were low *Employee Engagement* and low *Leadership Engagement*. Reason for these low engagement levels was the lack of *Awareness of Organizational Vision* in the *Inner Context* to deliver PCC with the use of DCM. Employees perceived DCM as something extra, a burden, instead of something that helps them with their daily routine of delivering PCC.

Next to the previously explained concepts negatively influencing implementation, the *Available Resources* for DCM and delivering PCC were low, as explained by a nurse: *"The expect us to cook, clean,* [perform] *daily care practices. It all adds. Also, they expect, since I am the contact for family for three clients, to report everything in their care reports. Having contact with family. And then there are these focus fields. My focus field is oral care. I also have these tasks added to my other tasks. There is just so much involved. Furthermore, they expect you to do nice stuff with the clients like playing a game or having a conversation. I just do not get to that."* (FAC1-Nurse). This lack of organizational resources and awareness of organizational vison further negatively influenced *Readiness for Implementation*.

The *Integration of Family Members* (and informal caregivers), which is defined as the degree of *Integration of Family Members* in relation to the implementation of DCM, is similar to the other concepts regarding *Inner Context* lacking. Caregivers had the responsibility to inform family and informal caregivers about upcoming mappings but lacked to fulfill this task. Informal caregivers were not aware of the existence of DCM and are not involved in the implementation process.

Characteristics of Individuals

As a result of the *Implementation Climate* and *Readiness for Implementation* in the *Inner Context*, Individuals perceived training for DCM and PCC as an additional task that hindered their daily routine and primary function of caregiving. *Knowledge & Belief about DCM* was low, as staff found it strange a mapper sits in the living room of the facility for several hours. Additionally, staff felt controlled by the mapper, making up excuses for their work habits towards mappers. Overall, individuals involved in

the implementation process were not negative towards DCM as a tool, however, as a result of the *Inner Context* conditions, this could not positively influence implementation.

Implementation Process

A planning of the DCM implementation in FAC1 was made, however they did not execute this. As explained by the project leader: *"The only plan we had, was to do a mapping twice a year, but this was not realized unfortunately."* (FAC1-Projectleader). Furthermore, *Reflecting & Evaluating* the implementation happened seldom in the first two years of using DCM. However, the formal appointed project leader made new plans to organize extra training sessions for employees, since the mappers asked for this in meetings. This was perceived necessary since management did not effectuate their delegated role as an *Opinion Leader* in the *Implementation Process*, as explained by a mapper: "*If the managers cannot motivate the employees to attend meeting, it will lead to take on a life of its own. If one does not show up, or two. They set an example to the rest of the team."* (FAC1-Mapper).

Identified concepts influencing DCM Implementation

Looking back at FAC1, we provide a table that shows the most striking concepts that influenced the implementation of DCM. Table 6 shows the most important concepts and categories for DCM implementation for this case.

Category	*Concept*
1. Intervention Content	Purpose DCM
3. Inner Context	Implementation Climate: - Tension for Change - Compatibility - Relative Priority - Goals & Feedback Implementation Readiness: - Leadership Engagement - Employee Engagement - Available Resources - Awareness of Organizational Vision
4. Characteristics of Individuals	Individual Perception of Training Knowledge and Belief DCM
5. Implementation Process	Planning Execution Opinion Leader

Table 6: Concepts that influenced DCM implementation (FAC1)

Case FAC2:

FAC 2 is a small facility that is part of a large sized organization and has implemented DCM just before the interviews were conducted. However, DCM is part of a larger project concerning the implementation of Person-centered Care throughout the entire organization. Besides conducting interviews with three respondents, the researcher also attended a team training which was part of the Person-centered Care project.

Intervention Content

At FAC2, a sense of the concept: *Knowledge of Evidence of Quality DCM* by management and the project leader influenced implementation in a positive manner. Since management had high knowledge of the quality of DCM, other concepts of the *Intervention Content* were assessed in congruence with this level of knowledge. As the project leader describes the decision-making process and the purpose of DCM: *"So we wanted to start something what could help employees and something that supports them. Something that shows them what is done correctly. Learn from each other instead of rubbing salt in the wounds after a mistake."* (FAC2-Projectleader).

Furthermore, this high level of knowledge in FAC2 of the WHAT of change (Pettigrew and Whipp, 1992), resulted in high awareness of the complexity of DCM with the project leader. As she states in the interview: *"DCM is very complex. Everything depends on implementation and the assurance."* (FAC2-Projectleader). The respondent also repeatedly mentioned that PCC had to be a precondition, in order to start with DCM, making it complex. The head nurse of the facility, when asked about complexity also perceived DCM as complex, nonetheless for a different reason. As she explains: *"It's complex. If you realize that the people that follow these trainings are especially lower skilled employees, that also had their education twenty years ago, and if you see how much information they need to obtain and remember; I think it is out of their league. Even the word: Dementia Care Mapping or Mapper."* (FAC2-Headnurse).

The third observed concept for the category *Intervention Content* is *Cost DCM*, referred to as costs of DCM and costs associated with implementing DCM. They took the costs of DCM consciously into account during the implementation of DCM. Management was aware of the high implementation costs, which lead them to decide to use DCM generally for group observations, instead of individual observations.

Outer Context

The decision to choose for DCM was led by the perceived high *Need for Person-centered Care* in the *Outer Context*; the WHY of strategic change (Pettigrew & Whipp, 1992). As the team managers explains: *"There must have been a need because it was felt that the care practices needed to be more person-centered. That led to the decision to choose for DCM. There was urgency."* (FAC2-Teammanager). The project leader explains this line of reasoning about the urgency, stating: *"The*

reason we chose this instrument was because of a report of the inspection, which was negative in terms of patient treatment." (FAC2-Projectleader). Surprisingly, the head nurse felt this external influence as a barrier to achieve person-centered care. According to the respondent, care practices are too much focused on what the inspection reports are based on, instead of a person-centered approach: *See how dominant the government is. Rules, policies. This is how it is done and that's it. If we deviate from that you'll be on a black list. What is the point?"* (FAC2-Headnurse).

Inner Context

In FAC2, the team manager, as well as the project leader argued the *Relative Priority* for DCM was high. Time and financial resources are being used for the PCC-project, with DCM as a part of the trajectory. However, the team manager stated the *Tension for Change* was not as high as she wants it to be. As she explains: *"I think colleagues are not involved enough. Managers are led by the troubles the day brings them"* (FAC2-Teammanager).

Implementation readiness was influenced by multiple observed concepts at FAC2. In FAC2 DCM is part of an overall vision to deliver PCC. Nonetheless, awareness of this vision is low, as the team manager explains: *"The want it in the vision, person-centered care. Nevertheless, it is not infused in the organization. That is my critique. They have let everybody know, but it is not infused."* (FAC2-Teammanager). *Leadership Engagement* influenced the degree employees were engaged in the implementation. Their presence at training sessions positively influenced the *Employee Engagement*; however, the head nurse overall described *Employee Engagement* low. As she clarifies her opinion of how to implement DCM: *"I think there should be more engagement from employees. They should attend meetings and feedback sessions of DCM. Also, culture. The importance of knowing the well-being of a client."* (FAC2-Headnurse).

Access to Knowledge and Information is high at FAC2, which positively influences the *Implementation Readiness*, however under one precondition: the way the knowledge and information is presented is should be tangible. Teams are formatted with especially low educated personnel, so training needed to be adjusted for this group of employees with practical assignments, instead of just theory about DCM and PCC. An important facilitator to meet this precondition turned out to be the team manager.

Characteristics of Individuals

Since training plays an important role in the implementation of DCM in FAC2, the concept of *Individual Training Perception* turned out to be a frequently observed concept in the data. Training sessions were made mandatory, so everybody in the organization was obliged to attend them, even the board of directors. This mandatory character was a result of the *Implementation Climate* and had a positive influence on the implementation readiness. In addition, the personal attributes of the project leader had a positive impact on implementation. Her experience with DCM gave her insights how to implement

DCM at FAC2. As she explains: *"The good thing is, I have been mapper at my previous employer. We didn't have training sessions like these over there."*, and: *"I found out my implementation was better than the one from* [institution]. *I am flexible and I know the organization. When we should have a mapping and how much time there should be between a mapping and a feedback session."* (FAC2-Projectleader).

Implementation Process

The *Process of Implementation*, or the HOW of change, as Pettigrew and Whipp (1992) define it, is at FAC2 highly influenced by the project leader. With the project leader being the *Formally Appointed Internal Implementation Leader* and because of the project leader's collaboration with the director, who she defines as an *Opinion Leader* and an ambassador for DCM, overall execution of implementation is according to the planning. Their vision of seeing DCM as an integral part of the organization in delivering PCC for persons with dementia has an overall positive influence on the planning process of the implementation.

Identified concepts influencing DCM Implementation

Looking back at FAC2, we provide a table that shows the most striking concepts that influenced the implementation of DCM. Table 7 shows the most important concepts and categories for DCM implementation for this case.

Table 7: Concepts that influenced DCM implementation (FAC2)

Category	*Concept*
1. Intervention Content	Knowledge of Evidence of Quality DCM Purpose DCM Complexity DCM Cost DCM
2. Outer Context	External Policy Needs PCC
3. Inner Context	Team Formation Implementation Climate: - Tension for Change - Relative Priority Implementation Readiness: - Leadership Engagement - Employee Engagement - Awareness of Organizational Vision - Access to Knowledge & Information

Table 7: Concepts that influenced DCM implementation (FAC2) (Continued)

Category	*Concept*
4. Characteristics of Individuals	Individual Perception of Training
	Other Personal Attributes
5. Implementation Process	Formally Appointed Internal Implementation Leader
	Opinion Leader

Case FAC3:

FAC3 is a medium sized facility, which is part of a medium sized organization that has implemented DCM two years before conducting the interviews. FAC3 is an organization with good scores at inspection reports however; DCM has not been in use for several months due to the high costs and the preference for implementing a video observation method.

Intervention Content

At an informal meeting with the facility manager and a team manager and a tour through the facility by the team manager, the expressed *Knowledge of Evidence of Quality DCM* was high. The facility manager attended several conferences about DCM and knows the tool since it was introduced in the Netherlands. The purpose DCM was being implemented at FAC3 was explained by a mapper: *"We already had video, but that was purely meant for care, not well-being. In the living rooms sometimes, things went wrong. That was a point of improvement for us."* (FAC3-Mapper). The team manager also explains that the perception of DCM is less threatening than video observations: *"DCM is more general. It is experienced less threatening than the video, because with video you can see yourself. That is the big difference."* (FAC3-Teammanager).

The cost of DCM was the reason video observations had the preference over DCM. As the mapper explained: *"Mappings were just too expensive. We had to be rescheduled, which meant we weren't at the workplace. However, we were needed there! How do you manage that? We were cut."* (FAC3-Mapper). Overall, knowledge about the content, the WHAT of change (Pettigrew & Whipp, 1992), was high, although because of the cost aspect of DCM, preference was given to video observations. The main reason for these high costs turned out to be the lost time costs for staff.

Inner Context

In FAC3, *Structural Characteristics* influenced the implementation of DCM and other *Inner Context* concepts. Nursing homes at FAC3 that still had large living rooms with approximately fifteen to twenty residents had more trouble implementing since the employees that work in such settings are not used to giving PCC. This lead to a negative influence on the *Implementation Climate* via low *Compatibility*. As

a mapper explains: *"They have built these living rooms. People do not know how to do that. All of a sudden, they have to cook. They are not used to that."* (FAC3-Mapper).

This resulted in *Employee Engagement* being heavily influenced by these old-fashioned nursing home structures and worked out as a barrier for DCM implementation. Some locations of FAC3 had teams with many employees that worked there for decennia, leading to low engagement for DCM. People felt controlled by mappers and even felt personally attacked at feedback sessions about their work as a nurse. Instead of DCM being a tool to assist in care practices for the delivery of PCC, employees perceived the feedback as criticism.

Furthermore, the degree of *Access to Knowledge and Information* at FAC3 hindered a positive *Readiness for Implementation*, making it hard for employees to see the WHY of the change. As a mapper explains: *"The nurses had no idea and knowledge of dementia. Everybody was treated the same. People with and without dementia."* (FAC3-Mapper). Moreover, the only way employees were informed about DCM was via e-mail. *"They already forgot what they read when we arrived. "What is DCM?", was what we heard. That was really bad."* (FAC3-Mapper).

Another concept that was argued by respondents in the *Inner Context* influencing implementation, were differences in *Leadership Engagement*. For locations where care practices were already person-centered, *Leadership Engagement* had a positive influence. However, for locations with a negative *Implementation Climate*, leadership was perceived negative. As stated by a mapper: *"The relation at the new location I worked at was not there at all. That person, who was a promoter of Person-centered Care, came to tell everybody how they were supposed to work. That worked on everybody's nerves.* [Especially] *Nurses. So that did not work. It badly influenced the work ethos and initiated a plaintive mood."* (FAC3-Mapper). *Leadership Engagement* was also crucial in the assurance of DCM, since it was their role to check whether advice from a mapping had been carried out.

Family members and health records were however very well included in the care plans of FAC3. Informal caregivers had digital access to the health records of their family members and were informed about DCM by team managers. On the other hand, mappings occurred seldom, making it more a snapshot than an integral part of care.

Implementation Process

Responsibility for the HOW of change at FAC3 lays for a great part with the mapper. They had many responsibilities for the specific *DCM Process Components* like training of mappers, feedback sessions after mappings and informing staff about DCM. A mapper explains, next to mapping sessions, feedback sessions are perceived difficult: *"Making it positive. Sometimes it is real hard. When things went wrong at a nursing home or when they had a hard day. The really have to welcome it."* (FAC3-Mapper). In addition, because of high costs, low priority for DCM and low *Leadership Engagement*, *DCM Process Components* were not executed. Meetings to reflect on DCM also occurred very infrequently. Planning was not carried out, since the priority was given to video observations. In addition, at the other nursing

home, mappings were not executed according to planning, but only when problems with residents occurred. However, the team manager of that location accompanied these feedback sessions. This positively influenced *DCM Process Components* like feedback about mappings.

Identified concepts influencing DCM Implementation

Looking back at FAC3, we provide a table that shows the most striking concepts that influenced the implementation of DCM. Table 8 shows the most important concepts and categories for DCM implementation for this case.

Table 8: Concepts that influenced DCM implementation (FAC3)

Category	*Concept*
1. Intervention Content	Knowledge of Evidence of Quality DCM Purpose DCM Cost DCM Perception DCM
3. Inner Context	Structural Characteristics Implementation Readiness: - Leadership Engagement - Employee Engagement - Access to Knowledge & Information Integration of Family Members
5. Implementation Process	DCM Process Components Planning Executing

Case FAC4:

Case FAC4 is a medium sized facility that just restarted using DCM because the first attempt to implement failed. The facility was part of a reorganization and the merger of two separate facilities occurred during the first process of implementation. The facility is part of the same organization as FAC2, which is implementing DCM as part of a project concerning the implementation of Person-centered Care throughout the entire organization. Implementation started two years before the interviews were conducted.

Intervention Content

The content, or the WHAT of the change (Pettigrew and Whipp, 1992), is strongly related to the context for this organization. The purpose of implementing DCM was therefore a complete cultural change of making this organization an organization that delivers PCC throughout all the facilities. A great facilitator for the decision to choose for DCM was the possibility to fund the costly project. Management had high awareness that the decision to implement DCM was paired with high costs. The director of the organization explains: *"I think it is a very costly decision we made. If we did not have these extra monetary funds, we were not able to say-to-say 'yes' to the project."* (FAC4-Director). High cost of DCM is mostly due to the lost time costs of employees. The possibility to implement DCM because of the monetary funds was not the only factor facilitating implementation. The board had a high perception of the advantage of implementing DCM versus alternative solutions, referred to as *Perception DCM*. This high degree of positive perception towards DCM turned out to be a facilitating concept.

Because DCM is implemented in combination with a larger project to realize PCC throughout the organization, DCM is perceived as complex. By seeing that DCM is more than just a new tool, but a complete cultural change, this awareness of the complexity of DCM served the implementation positively.

Outer Context

For the WHY to decide to start the project, management was influenced by *External Policy*, since the organization scored below average on a satisfaction survey for three of the eleven facilities. Because of this poor score on the satisfaction survey, management decided to write a new care plan for the organization. This plan was approved by the inspection, freeing up governmental funds. This financial stimulus enabled management to start the new project DCM was part of.

Inner Context

After the poor scores on the satisfaction surveys which lead to the start of the project, FAC4 was one of the three pilot locations to start with DCM. The fact implementation failed drastically was because of multiple observed concepts in the *Inner Context*.

Firstly, at the time the project started, the facility was in a renovation. Two facilities merged into one big facility and at the time of implementation, the facility was under construction. These *Structural Characteristics* had a negative impact on *Compatibility*, i.e. the degree of fit of DCM in the location. Management wanted to start the project because of the low scores on the survey; however, the location was not ready for a change project with a scale like this. As a head nurse explains: *"Management should have made the call: "This is not the correct moment to start.", The preconditions were not there."* (FAC4-Headnurse). Instead of training sessions being held with the purpose to learn from DCM, employees used the training sessions to complain about their daily tasks. As a head nurse states: *"The training started with complaints, and before those complaints ended, we were halfway the*

training." (FAC4-Headnurse). Many of the complaints were about the construction, working hours, lack of management and employees that felt not being heard.

Relative Priority and *Leadership Engagement* was also low at FAC4. Only the smallest education package of DCM was bought for the facility (due to low *Available Resources*) and because of the low *Leadership Engagement*, there was no awareness of the organizational vision and an insufficient *Tension for Change*. Nobody was explained the reason why DCM was being implemented and support from management was not perceived at the facility. As a nurse explains: *"Also the trainer said she had the feeling something was wrong with management."* (FAC4-Nurse).

The effects of these negative concepts had enormous effects on *Employee Engagement* and therefore implementation. A nurse argued: *"There was resistance. Not everybody showed up at trainings. It was intensive as well. Just when I had two days off, I also have my own planning. I am not coming back to work for yet another training. It is such a workload. I also have my own life!"* (FAC4-Nurse). The director of the organization verified this: *"Employees did not recognize the education. Something went really wrong."* (FAC4-Director).

Characteristics of Individuals

Following the *Inner Context* and the concepts negatively influencing implementation, *Individual Training Perception* was the main concept negatively influencing implementation. Without *Leadership Engagement*, it was impossible for the training to land. Individuals therefore had a wrong *Knowledge & Belief about DCM*. As a nurse explains: *"From one perspective it is a good thing there is somebody observing, but on the other hand, I really doubt someone can have a realistic and complete mapping of person in six hours."* (FAC4-Nurse). Overall, the lack of awareness of the usefulness of DCM to deliver PCC, lead to a negative perception of training and a negative knowledge about DCM, that further negatively influenced implementation.

Implementation Process

As described earlier, FAC4 had low leadership involvement. The *Formally Appointed Internal Implementation Leader* had no influence on decision-making done by facility management. As the head nurse recalls: *"At the end, management made the call. The project leader had the option to give advice, but still, it was management who had the choice: 'Do we follow these advises?"* (FAC4-Headnurse). At the facility, an *Opinion Leader* or *Champion* of DCM was absent. By *Reflecting & Evaluating*, the pilot training became mandatory and team managers were appointed as *Opinion Leaders* of DCM, having a formal and informal influence on employees regarding DCM.

Identified concepts influencing DCM Implementation

Looking back at FAC4, we provide a table that shows the most striking concepts that influenced the implementation of DCM. Table 9 shows the most important concepts and categories for DCM implementation for this case.

Table 9: Concepts that influenced DCM implementation (FAC4)

Category	*Concept*
1. Intervention Content	Cost DCM Perception DCM Complexity DCM
2. Outer Context	External Policy
3. Inner Context	Structural Characteristics Implementation Climate: - Compatibility - Tension for Change - Relative Priority Implementation Readiness: - Leadership Engagement - Employee Engagement - Available Resources
4. Characteristics of Individuals	Knowledge & Belief DCM
5. Implementation Process	Engaging: - Opinion Leader - Champion Reflecting & Evaluating

Case FAC5:

FAC5 is unlike the other studied cases a private nursing home. There are only two groups of residents; a group of eight and a group of six persons with dementia. DCM has been in use for five years before the interviews were conducted and is an integral part of the care plan.

Intervention Content

The purpose of DCM in FAC5 is DCM being an enrichment of the total care plan. The use of DCM is not a primary objective on itself, but more of a purpose to deliver PCC. As the director explains: *"For us it more of an enrichment to get to know the resident even better"* (FAC5-Director). Additionally, the

perception of DCM, or the advantage of using DCM compared to other instruments, is the possibility to provide employees with objective feedback. As a mapper argues: *"Because you have evidence so to say. You actually saw something and because it is derived from an instrument you have clear proof."* (FAC5-Mapper).

Moreover, cost of DCM is not seen as a negative influence for implementation. The mapper explains this by stating: *"It is time consuming. Whether that is a disadvantage of DCM, you should ask yourself: 'For who is this a disadvantage?' Yes, it can be a disadvantage for many nursing homes since it is time consuming, but I don't see it that way, because it also saves time."* (FAC5-Mapper).

Inner Context

FAC5 is a small organization with only fourteen residents. These *Structural Characteristics*, as well as the solid Team Formation had a positive influence on flexibility in using DCM. DCM is used when needed at FAC5, and not at predetermined dates, because of the high *Available Resources* (enough staff to make up for the lost time costs). In addition, *Relative Priority* of DCM is high, as clarified by the director: *"It is part of our multidisciplinary meetings. Like there is a general part, a part medication, we also have a part DCM."* (FAC5-Director).

Everybody at FAC5 was informed about DCM right from the start with a presentation about the fundamentals of DCM. This high *Access to Knowledge and Information* about DCM further positively influenced *Employee Engagement* and awareness of the organizational vision to deliver PCC with DCM. This high *Employee Engagement* led to employees asking for mappings, to get a more complete picture how to deliver PCC.

Moreover, goals and feedback are communicated at daily transfer moments for thirty minutes. By having these daily meetings, employees evaluate the quality of care delivered on that specific day. As a mapper explained: *"And really discussing the residents with each other. How are we doing? Do we have to adjust the care plans or is everybody working according to what we agreed?"* (FAC5-Mapper). This high priority of evaluating and communicating about DCM, gave DCM a leading role in day-to-day care practices.

Characteristics of Individuals

All the concepts identified at the category *Characteristics of Individuals* had a positive influence on the implementation of DCM. There was a clear vision of how to provide Person-centered Care before DCM was implemented, and as stated above, DCM was more a means to an end rather than a stand-alone intervention. Overall, employees had an overall positive attitude towards DCM and a high feeling of self-efficacy to deliver PCC.

Implementation Process

At FAC5, mappings occur when needed, or following planning, once a year for every resident. All the mappings are linked to multidisciplinary meetings and because of the high *Individual Perception of PCC* and DCM, *DCM Process Components* like training and feedback sessions were positive.

Identified concepts influencing DCM Implementation

Looking back at FAC5, we provide a table that shows the most striking concepts that influenced the implementation of DCM. Table 10 shows the most important concepts and categories for DCM implementation for this case.

Table 10: Concepts that influenced DCM implementation (FAC5)

Category	*Concept*
1. Intervention Content	Cost DCM Perception DCM Purpose DCM
3. Inner Context	Structural Characteristics Team Formation Implementation Climate: - Relative Priority - Goals & Feedback Implementation Readiness: - Employee Engagement - Access to Knowledge & Information - Available Resources - Awareness of Organizational Vision
4. Characteristics of Individuals	Knowledge & Belief DCM Individual Perception of PCC Self-Efficacy
5. Implementation Process	Planning Reflecting & Evaluating

Cross-case Analysis

The within-case analysis showed what concepts were most influencing implementation of DCM for each individual case. In this cross-case analysis, we compare the identified concepts for each case. After comparing the concepts, we identify the most influencing mechanisms that are interplaying with concepts from our conceptual framework (Figure 3) which are presented in a matrix.

Intervention Content

Purpose DCM

The purpose of DCM differed between the cases. FAC1 and FAC3 had the purpose to use DCM when problems with persons with dementia were encountered, while FAC2, FAC4 and FAC5 saw it as an addition to practices already in use. Implementation of DCM was most successful at FAC5, which saw the use of DCM as means to an end rather than an objective itself. This lead to DCM being used as an integral part of the overall Person-centered Care practices, instead of an isolated implementation.
Furthermore, cases that were more successful in the use of DCM (FAC5 and to a lesser extent FAC2 and FAC4) had DCM incorporated in an overall vision of delivering PCC. Making DCM an integral part of the overall care plan is argued to be a precondition for successful implementation.

Complexity DCM

In FAC2 and FAC4, the *Intervention Content* (DCM) was recognized as complex. This complexity interplayed with two different other concepts: *Employee Engagement* and *Culture.* Since DCM is a complex tool, a change in culture is required before DCM can successfully be implemented. *Culture*, referred to as a set of basic assumptions, values and norms, needs to become more person-centered. In other words: values, norms and basic assumptions need to shift from a task-oriented type of caregiving towards values and norms that align with PCC. Furthermore, because of the complexity of the training to work with DCM, successful implementation asked for high *Employee Engagement*.

Cost DCM

The concept cost was of importance in all cases. The costs of DCM interplayed with several other concepts (e.g. *External Policy, Available Resources, Individual Stage of Change*). The influence of *Cost of DCM* had a negative influence on implementation at all cases expect for FAC5. At FAC3, DCM was cut since there were no *Available Resources* for DCM and preference was given to another tool, therefore interplaying with *Available Resources* (*Inner Context*). At FAC4, *External Policy* (part of the *Outer Context*) was reason to start with DCM and it provided part of the required funds. Contrary, in FAC5, Costs of DCM were of no influence. The *Individual Stage of Change* (*Characteristics of Individuals*) had a positive interplay on how Costs of DCM were perceived, because the high degree of skilled, sustained and enthusiastic use of DCM with individuals at FAC5. This led to DCM being perceived as a tool that could save time and resources, and therefore reduce overall operating costs.

Outer Context

External Policy & Need for Person-centered Care

The WHY of strategic change, *Outer Context*, was throughout the cases influenced by two concepts: 1) *External Policy* and 2) *Need for Person-centered Care*. First, implementation of DCM is influenced by external policies because these external policies forced nursing homes to provide more PCC through inspection surveys and reports. Negative scores forced organizations to implement a tool to provide more Person-centered Care, which led to DCM at the observed cases. Furthermore, because of the *External Policy*, FAC2 and FAC4 wrote a new care plan, which was approved by the inspection. This released funds to FAC2 and FAC4, therefore interplaying with the concept *Cost DCM*, as described earlier on page 32.

With reports and inspections resulting from external policies, organizations were pushed to adopt a more person-centered approach. However, an interviewee at FAC2 also highlighted the negative influence on PCC. Reports and policies sometimes force facilities to provide care according to these reports, since not following these strict rules can lead to a facility being blacklisted. This can force organizations to spend resources more task-oriented, since they have to meet these policy standards. This is contrary to having a purely PCC-focus, hence interplaying with concepts like *Relative Priority* and *Available Resources* (*Inner Context*).

Inner Context

Structural Characteristics & Team Formation

The participating facilities had different *Structural Characteristics* (e.g. the age, maturity, size, locations and social architecture of the organization). The interviews showed that nursing homes with small living rooms (FAC5) were more compatible for mappings and had more possibilities to have mappings. This had a positive influence on *Compatibility (Inner Context)*. The opposite was observed in FAC3, where living rooms used to consist of approximately twenty residents. Furthermore, in FAC4, a reorganization and renovation of the facility had negative effects on implementation, since this lead to disorder of the daily routines for clients and staff. These results are in line with the findings by Quasdorf et al. (2017), who state that dementia friendly characteristics like stable environments for persons with dementia and small living rooms, facilitate implementation.

Stability in teams turned out to be an important precondition for successful implementation of DCM and stability interplays with other concepts in the *Inner Context* including *Implementation Climate* and *Implementation Readiness*. Next to team stability, team composition should be taken into account regarding *Team Formation*. Since teams consist of people with different competences and education (e.g. nursing, psychology, management), there is a difference in how education and training is apprehended. Training programs should be aligned with educational background and made consistent with the *Team Formation*. Thus, the concept *Team Formation* interplays with *Access to Knowledge & Information (Inner Context)* and *Other Personal Attributes (Characteristics of Individuals)*. All the

cases provided training for the delivery of PCC with the use of DCM, nevertheless; at none of the observed cases, the interplay of *Team Formation* and *Access to Knowledge & Information (Inner Context)* and *Other Personal Attributes (Characteristics of Individuals)* was taken into account.

Implementation Climate:

Three concepts of the *Implementation Climate* were observed in within-case analysis: 1) *Tension for Change*, 2) *Compatibility* and 3) *Relative Priority*. *Tension for Change*, or the degree of which stakeholders perceive the situation needing change or intolerable, was observed interplaying with several other concepts (e.g. *Compatibility*, *Awareness of Organizational Vision* and *Leadership Engagement)*. At case FAC1, employees say they do not have the time to work person-centered or that they do not see the value of DCM to assist them in having a more person-centered approach. Here we witness *Tension for Change* interplaying with the concepts *Compatibility* and *Awareness of Organizational Vision*. Similar results were found at FAC2 and FAC4. Furthermore, at FAC1 and FAC4 the low degree of *Tension for Change* was the result of low *Leadership Engagement* (e.g. managers not showing up at meetings).

In all case sites, *Compatibility* was influenced by concepts of the *Inner Context*. A change in workflows, like moving from task-oriented caregiving to Person-centered Care, low *Leadership Engagement* and a low *Tension for Change* led to low *Compatibility* in FAC1, FAC3 and FAC 4. This low *Compatibility* fed resistance amongst employees against *DCM Process Components* such as feedback sessions and a negative stage of change among individuals.

The third observed concept of the *Implementation Climate* is *Relative Priority*, referred to as the shared perception of individuals of the importance of DCM. Mixed results were found amongst the cases. For FAC1 and FAC3, low *Relative Priority* led to resistance amongst employees against *DCM Process Components* (e.g. feedback sessions, reports and team meetings particularly for DCM). Consequently, this negatively interplayed with the degree of skilled, enthusiastic and sustained use of DCM: The *Individual Stage of Change* (*Characteristics of Individuals*).

For FAC2 and FAC4, management gave priority to the implementation of DCM through allocating a large budget for a multiannual plan of transforming the organization. However, these cases failed to have a shared *Relative Priority* amongst management and team leaders, resulting in a predominantly negative overall perception of the importance of DCM in these cases. In FAC5 *Relative Priority* was high. Main reason for this high priority was the integration of *DCM Process Components* in multidisciplinary meetings and high *Access to Knowledge and Information* of DCM through kickoff meetings and presentations by mappers about DCM.

Implementation Readiness:

For Implementation Readiness, in this study referred to as tangible indicators of organizational commitment to the decision to implement DCM, the most salient concepts identified in the within case analyses were *Leadership Engagement* and *Employee Engagement*.

Leadership Engagement (the commitment, involvement, and accountability of leaders and managers with the implementation of DCM) is a crucial concept for the implementation of DCM. In all the studied cases except FAC5, *Leadership Engagement* needed improvement. Furthermore, this concept was not an integral part of the HOW, the *Process of Implementation*. While having an evident influence on all the *Inner Context* concepts, none of the team managers was actively involved in components of *Planning* and *DCM Process Components*. Contrary, at FAC5, where the *Leadership Engagement* appeared positive, leaders were actively involved in the *Planning*, *Engaging* and *Execution* of the *Process of Implementation*.

Overall, none of the respondents were negative towards PCC and none had a negative knowledge and believe of DCM. Although, *Employee Engagement* was low at all cases except FAC5, since at all the other studied cases preconditions like sufficient *Available Resources*, high degree of *Leadership Engagement* and high *Relative Priority* were not met.

Available Resources appeared as an interplaying mechanism with the concept *Cost DCM*. At all the studied cases except FAC5, there were insufficient *Available Resources* to cover the high cost of DCM. Especially costs to cover up lost time costs for employees that had to attend training was an observed implementation barrier for FAC1-FAC4 together with high work pressure for the autonomous teams. At FAC5, sufficient staff (e.g. high *Available Resources*) facilitated DCM implementation.

Access to Knowledge & Information and *Awareness of Organizational Vision* were very much intertwined with the other concepts in the *Inner Context*. Especially a high degree of *Leadership Engagement* and a positive *Implementation Climate* affected these concepts positively. Furthermore, *Access to Knowledge & Information* turned out to be an important precondition for a positive *Awareness of Organizational Vision* and strongly interplaying with *Characteristics of Individuals* concepts: *Knowledge & Belief about DCM* and *Individual Stage of Change*.

Characteristics of Individuals

Overall, none of the respondents at the studied cases had a negative perception about PCC and the instrument DCM. However, as can be read in the cross-case analyses of the *Inner Context*, the degree of influence of concepts of this category (*Characteristics of Individuals*) were consistent with the degree of influence of *Inner Context* concepts. For instance, the interplay of *Compatibility* with *Individual Stage of Change* (see *Inner Context*).

Results of a low *Knowledge & Belief about DCM* led to a depreciative attitude of individuals towards *DCM Process Components* and low *Perception of Need for Training* among individuals. The main

interplaying concepts from the *Inner Context* were *Available Resources, Leadership Engagement, Tension for Change and Compatibility.*

Implementation Process

In cases FAC1 and FAC3, mappings did not occur according to the planning. We consider the degree to which the proper and appropriate individuals are attracted (e.g. the concept: *Engaging)* the main facilitator and barrier for *Planning*, *Execution* of DCM and *DCM Process Components*. At all observed cases the absence of *Champions* and *Opinion Leaders* had a negative effect on other Implementation Process concepts, thus influencing DCM Implementation.

Moreover, at FAC 3 the main concepts interplaying with *DCM Process Components* were high costs (*Cost DCM*), low priority for DCM (*Relative Priority*) and low *Leadership Engagement*. This interplay made *DCM Process Components* hard to execute by mappers, since: 1) employees did not attend feedback sessions and meetings designed for DCM 2) managers failed to set an example for the rest of the team and 3) the workload of day-to-day care was already very demanding. High *Leadership Engagement* however, positively influenced training and feedback sessions at FAC2, FAC4 and FAC5.

Besides this interplay, self-efficacy of mappers and their personal attributes seemed important at FAC1 and FAC3 for the *DCM Process Components*. Components like giving feedback to employees and the reporting of findings from a mapping were described as hard and as a competence you really had to learn gradually during implementation. At FAC5, *DCM Process Components* were part of the multidisciplinary meetings, facilitating the implementation and interplaying with *Characteristics of Individuals* like *Knowledge & Belief about DCM* and *Individual Stage of Change*.

Matrix of interplaying mechanisms influencing DCM implementation

As a result of the cross-case analyses and the identified interplaying mechanisms, the following matrix (Table 11) was composed. This matrix shows all the concepts that were identified interplaying with other concepts in the studied cases. In the left column, the five categories from the conceptual framework (Figure 4) are presented, along with the concepts that were identified in the cross-case analyses as the most influencing concepts regarding DCM implementation. In the upper row of the matrix of interplaying mechanisms, the same categories from the conceptual framework are presented, thereby allowing concepts and categories to interplay. An example of how to read the matrix: for the category *Intervention Content*, the concept of *Cost DCM* interplays with *External Policy* from the *Outer Context*, *Available Resources* from the *Inner Context* and the *Individual Stage of Change* from the category *Characteristics of Individuals*. Furthermore, the colors indicate which concept belongs to which category. This is also visualized in our conceptual framework (Figure 4), illustrating how mechanisms interplay between the five categories of our conceptual framework and matrix.

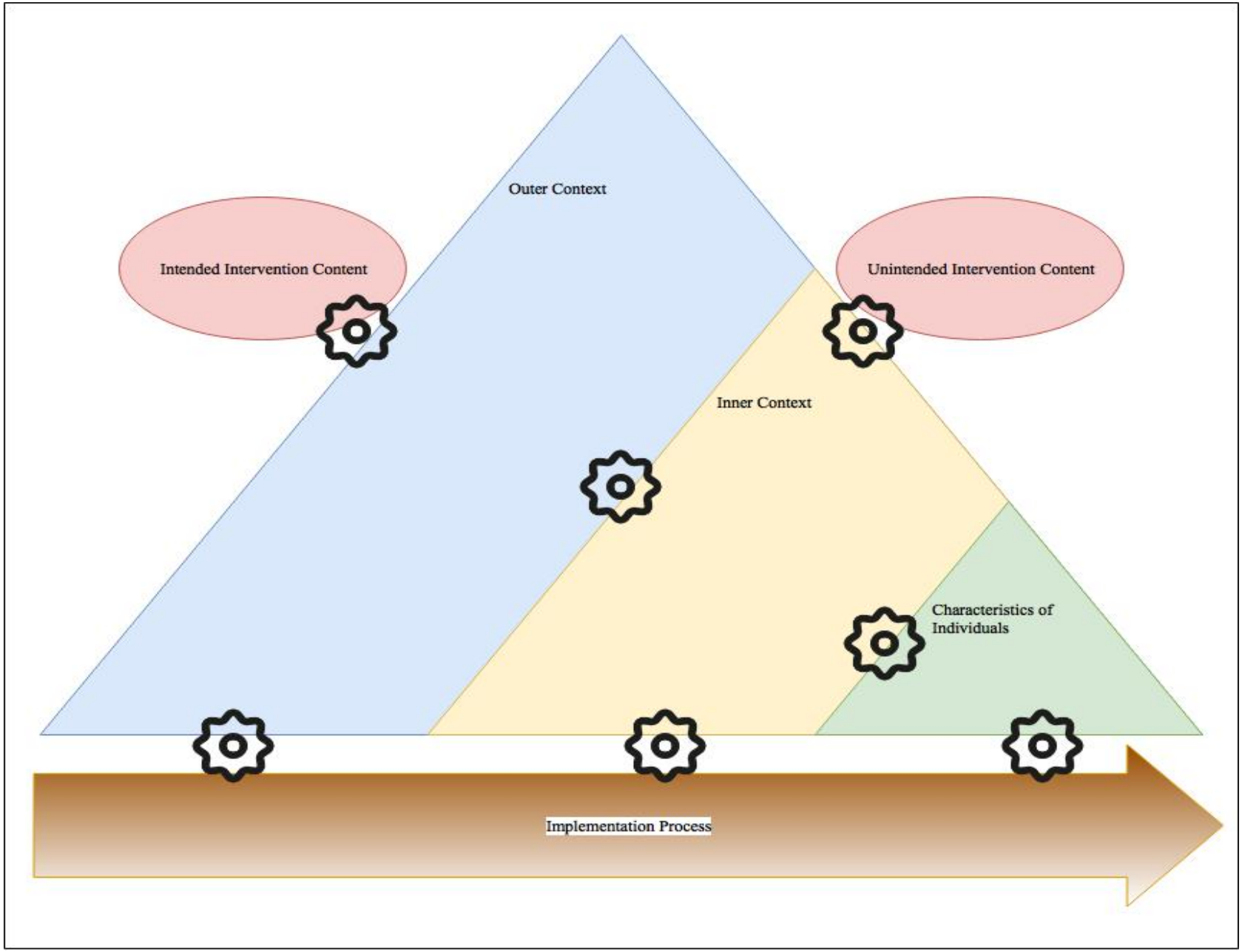

Figure 4: Conceptual Framework of interplaying mechanisms of implementing DCM to deliver PCC in the elderly care context

Table 11: Matrix of interplaying mechanisms influencing DCM implementation

CATEGORY	**1. Intervention Content**	**2. Outer Context**	**3. Inner Context**	**4. Characteristics of Individuals**	**5. Implementation Process**
1. Intervention Content					
- Purpose DCM					
- Cost DCM		*- External Policy*	*- Available Resources*	*- Individual Stage of Change*	
- Complexity DCM			*- Employee Engagement* *- Culture*		
2. Outer Context					
- External Policies	*- Cost DCM*		*- Relative Priority* *- Available Resources*		
3. Inner Context					
- Structural Characteristics			*- Compatibility*		
- Team Formation			*- Access to Knowledge & Information*	*- Other Personal Attributes*	

CATEGORY	1. Intervention Content	2. Outer Context	3. Inner Context	4. Characteristics of Individuals	5. Implementation Process
Implementation Climate: *- Tension for Change*			*- Compatibility* *- Awareness of Organizational Vision* *- Leadership Engagement*		
Implementation Climate: *- Compatibility*				*- Individual Stage of Change*	*- DCM Process Components*
Implementation Climate: *- Relative Priority*			*- Access to Knowledge & Information*	*- Individual Stage of Change*	*- DCM Process Components*
Implementation Readiness: *- Leadership Engagement*					*- Planning* *- Engaging* *- Executing* *- DCM Process Components*
Implementation Readiness: *- Available Resources*	*- Cost DCM*				
Implementation Readiness: *- Access to Knowledge & Information*			*- Leadership Engagement* *- Implementation Climate*		
Implementation Readiness: *- Awareness of Organizational Vision*			*- Leadership Engagement* *- Implementation Climate*	*- Knowledge & Belief about DCM* *- Individual Stage of Change*	

CATEGORY	1. Intervention Content	2. Outer Context	3. Inner Context	4. Characteristics of Individuals	5. Implementation Process
4. Characteristics of Individuals					
- Knowledge & Belief about DCM			*- Available Resources* *- Leadership Engagement* *- Tension for Change* *- Compatibility*		*- DCM Process Components*
- Perception of Need for Training			*- Available Resources* *- Leadership Engagement* *- Tension for Change* *- Compatibility*		
5. Implementation Process					
- Planning					*Engaging (Opinion Leaders, Champions)*
- Execution					*Engaging (Opinion Leaders, Champions)*
- DCM Process Components	*- Cost DCM*		*- Available Resources* *- Relative Priority* *- Leadership Engagement*	*- Knowledge & Belief about DCM* *- Individual Stage of Change* *- Self-efficacy* *- Other Personal Attributes*	*Engaging (Opinion Leaders, Champions)*

DISCUSSION

In recent literature, factors that facilitate and influence DCM implementation have been studied (Quasdorf & Bartholomeyczik, 2017; Rokstad et al., 2015; Quasdorf et al., 2017). However, no research tried to understand *how* these factors interplay as mechanisms. In this study, a novel understanding has been developed of what the interplaying mechanisms are during the implementation of DCM. The conceptual framework (Figure 4) aims to: 1) visualize these interplaying mechanisms and 2) provide the study a theoretical starting point, which had his foundation in acknowledged implementation literature (Pettigrew & Whipp, 1992; Damschroder et al., 2009). The adoption and adaptation of the CFIR by Damschroder et al. (2009) ensured the study that concepts and categories were studied systematically. Furthermore, this systematic approach aided this research to provide this study a comprehensively organized and valid case analysis.

Derived from the conceptual framework (Figure 4), data and cases, the mechanisms interplaying in the implementation of DCM were identified and presented in a matrix (Table 11). These steps were set out to answer this study's research question: *What are interplaying mechanisms in the implementation of Dementia Care Mapping that influence DCM's contribution to delivering Person-centered Care in the elderly care context?*

In total, eighteen concepts interplayed with twenty different concepts, divided over five categories. Concepts from the category *Inner Context* were mainly observed (see Table 11). By identifying these interplaying mechanisms, a deeper understanding and explanation has been generated in how DCM contributes to the four constructs of Person-centered Care, developed by McCormack and McCance (2006). The PCC framework by McCormack and McCance (2006) consists of four constructs: 1) *prerequisites*, 2) *care environment*, 3) *person-centered processes* and 4) *outcomes*. In the following part of this study, we discuss the paramount theoretical and managerial implications regarding this study's findings (e.g. identified interplaying mechanisms that influence DCM's contribution in the delivery of Person-centered Care). This section will conclude with opportunities for future research and study limitations.

Theoretical Implications

Overall, the interplaying mechanisms of implementation of DCM that were identified in this research helped to enrich the understanding of implementation of such tools in a health care context. Considering the high failure rate of more than 50% (Alexander, 2008), enrichment of this field of research is needed, especially considering the numerous factors influencing a complex intervention like DCM (Damschroder et al., 2009; Chaudoir, Dugan & Barr, 2013). This research contributed to this field of research by identifying concepts that influence implementation of DCM. Additionally, this study identified interplaying mechanisms between these concepts, therefore enriching prior research.

To enrich prior studies, the findings of this study contribute to the discussion in recent literature (Chenoweth et al., 2009; Van de Ven et al., 2013; Rokstad et al., 2013) whether mixed results regarding the impact of DCM on the quality of life for persons with dementia is 1) consequence of the tool DCM, or 2) result of failed implementation efforts. The complexity of the tool caused heterogeneous outcomes regarding agitation, challenging behavior and effect of DCM on the quality of life (Chenoweth et al., 2009; Van de Ven et al., 2013; Rokstad et al., 2013; Quasdorf et al., 2017). By having a more comprehensive overview of the interplaying mechanisms for the implementation of DCM in a health care context of nursing homes, this study offers new insights with regard to this debate.

This study therefore draws upon the work by Van de Ven et al. (2014), Quasdorf et al. (2017) and Quasdorf and Bartholomeyczik, (2017). Van de Ven et al. (2014) discussed the possibility that not solely the concept of DCM leads to heterogeneous outcomes of PCC for persons suffering from dementia, acknowledging the potential importance of implementation this study focused on. Moreover, Quasdorf et al. (2017) and Quasdorf and Bartholomeyczik (2017) identified several factors influencing implementation of DCM. Our study builds on these findings by not only identifying a comprehensive overview of factors influencing implementation, but also by showing how these factors interplay, providing a deeper understanding of the Implementation Process. For example, Quasdorf et al. (2017) identified stable and well-functioning teams and open communication structures as positively influencing implementation. This study adds to these findings by identifying the interplay of the concepts (e.g. *Team Formation* with the concept *Other Personal Attributes*, rather than just identifying *Team Formation* as an influence).

Furthermore, this study draws upon the work of Heller (2003) and Rokstad et al. (2013), who identified contextual factors playing a critical role for implementation. In this study, we separated the broad concept of 'context' in smaller concepts of context, being: 1) *Outer Context*, 2) *Inner Context* and 3) *Characteristics of Individuals*. By doing so, a deeper understanding of contextual factors and mechanisms was forged.

In addition to this research' gained theoretical insights for the elderly care context of dementia care, this study provided understandings for other health care contexts implementing DCM. The study therefore draws upon research by Schaap, Dijkstra, Finnema & Reijneveld (2017) conducted in the context of health care for persons with intellectual disability and the use of DCM.

Also, this study identified the importance of *DCM Process Components*, which besides a study by Surr, Griffiths & Kelly (2018) is not addressed yet in literature. By identifying the interplay of this concept with other implementation concepts, our study emphasizes and acknowledges the importance of this aspect of DCM for the delivery of PCC.

Most importantly, our research acknowledges and expands findings by Quasdorf et al. (2017) regarding the role of the four concepts of PCC (McCormack & McCance, 2006) in relation to DCM as an intervention designed for the delivery of PCC. We follow the arguments of Quasdorf et al. (2017), stating DCM cannot affect the four constructs of PCC when DCM is implemented as an isolated

intervention. This research' identification of the interplaying mechanisms for implementation of DCM helps to develop understandings how DCM can contribute to the delivery of PCC. Predominantly because having an understanding of implementation mechanisms provides a deeper understanding of how DCM can be implemented as an integrated intervention, targeting all the constructs of PCC, rather than being an isolated intervention, not targeting the PCC constructs as a whole. For instance, the understanding of the interplaying mechanisms for DCM implementation in the *Outer Context* and *Inner Context* with the *Process of Implementation* helps to understand how different constructs of the PCC framework (e.g. *care environment* and *person-centered processes*) interrelate and can be targeted.

Based on this discussion, we formulated the following proposition:

- *In order to deliver Person-centered Care, the more holistic DCM implementation is approached, the more DCM contributes to all the constructs of Person-centered Care.*

Managerial Implications

Based on this study's findings, we were able to compose several managerial implications. The need for these implications is unmistakably high, since the enormous challenge the world faces with the rising amount of people suffering from dementia worldwide (Vellas et al., 2012).

Firstly, with DCM considered as an acknowledged tool for the delivery of PCC for persons with dementia, knowledge about implementation mechanisms contributes to health care practices. Since DCM is a complex tool with many factors influencing implementation, our identified interplaying mechanisms through our conceptual framework (Figure 4) and matrix of interplaying mechanisms (Table 11) provides a better understanding for management of these factors. The numerous concepts and mechanisms interplaying in DCM's implementation can have an overwhelming effect for management. Our findings provide a visualized overview of these mechanisms, thereby assisting management in assessing which contextual factors need to be addressed or present (e.g. the *Inner Context* concept: *Structural Characteristics*), for making a successful implementation possible.

Furthermore, our findings provide care practice in the elderly care context the information needed to develop action plans for the implementation of DCM, thereby contributing to the delivery of PCC in the nursing home context. Seen the tendency in the healthcare context to shift from task-oriented caregiving to Person-centered Care, our research can assist management in translating implementation theory into practice.

Lastly, policy in most European countries is to keep persons with dementia home as long as possible before moving patients to nursing homes as an endpoint (Vellas et al., 2011; Forbes et al., 2008). Our research findings conjointly contribute to the exploration of the possibility to implement DCM in the home care context, since we provide an overview of implementation factors that are relevant and applicable for more than just the nursing home context.

Limitations and future research

There are some that limitations must be addressed for our research. Firstly, while this research provides a systematic approach, comprehensively covering the CFIR by Damschroder et al. (2009), not all concepts of the framework were found in the data. Reason might have been the size of the group of respondents (N=15).

Secondly, none of the respondents was predominantly negative towards DCM; therefore, the data did not cover a full range of staff views. This being a general challenge of case studies, further research is needed to assess generalizability, as well as external validity (Yin, 2003). Nonetheless, the interviews were valuable and provided relative insights regarding the research question of this study.

Thirdly, the research had to be conducted in a relatively short period. The research was limited by this time factor, since this obstructed the researcher to: 1) follow different phases of the Implementation Process and 2) conduct more interviews during the process of implementation. This led to this research being in retro perspective and solely focused on facilities that did implement DCM. Future research of facilities that did start an Implementation Process, nevertheless failed to implement DCM is therefore suggested. Furthermore, the time frame of this study limited the researcher to have the data coded by multiple researchers.

Lastly, the study did not focus on the perspective of the person with dementia, which is in fact the primary stakeholder of DCM. In addition, the informal caregivers that were interviewed (N=2) did not provide relevant insights of the contribution DCM has on delivering PCC from the client's perspective, since one respondent was not aware of DCM and the other informal caregiver only experienced one mapping. Future research providing more insights from the client's perspective might therefore be valuable in assessing the contribution of DCM to deliver PCC.

Future studies should use the identified interplaying mechanisms as a starting point for future research in understanding what concepts need to be in place for successful use of DCM. Further understanding of these mechanisms can contribute to: 1) delivery of PCC, 2) a fuller understanding of the Implementation Process and 3) developing implementation strategies. Additionally, process evaluations should be included in future studies on DCM implementation, therefore developing additional knowledge of implementation issues and implementation strategies in this context. Besides contributing this study's context, such insights can contribute to other contexts DCM is used for, like the home care context or the context of care for persons with an intellectual disability.

CONCLUSION

This study focused on the interplaying mechanisms in the implementation of Dementia Care Mapping that influence DCM's contribution to delivering Person-centered Care in the elderly care context. By using the CFIR by Damschroder et al. (2009), a theoretical grounded conceptual framework was developed to provide the research a guide and theoretical starting point. In order to identify the interplaying mechanisms of implementation, fifteen interviews were conducted at five different health care organizations using DCM in the Netherlands. The results of these interviews were presented in a cross-case analysis, which led to a matrix of interplaying mechanisms influencing DCM implementation. The most important finding of this study is the identification of eighteen interplaying mechanisms, which makes this study propose a holistic approach for the implementation of DCM to successfully implement DCM and deliver Person-centered Care.

By identifying these interplaying mechanisms, this research contributes to the field of implementation research regarding DCM. Furthermore, this study's comprehensive overview of interplaying mechanisms contributes to the understanding of DCM's complexity, which caused heterogeneous results in the past. Furthermore, a deeper understanding and explanation has been generated in how DCM contributes to the four constructs of Person-centered Care, developed by McCormack and McCance (2006). The most important contribution of this research is it's novel understanding of factors interplaying when DCM is implemented for the delivery of PCC. Ultimately, this research' aim is to stimulate future research in developing additional knowledge of DCM implementation strategies for multiple care contexts.

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APPENDIX I: Interview Protocol

Interview DCM

Inleiding: Bedanken en instructie:

- Bedankt voor de deelname aan dit interview
- Het interview zal circa 45 minuten tot een uur duren
- Uiteraard worden de interviews vertrouwelijk verwerkt
- De resultaten van het onderzoek zullen worden gerapporteerd aan de deelnemende instellingen
- Als u het goed vindt wordt het interview opgenomen. Enkel door mij zullen de opnames beluisterd worden. De opnames zullen mij helpen de informatie uit het interview te analyseren. Na de analyse zal ik ze overdragen aan de Rijksuniversiteit Groningen.

Voorstellen:

Ik ben Vincent Eijkelenkamp, een student aan de Rijksuniversiteit Groningen. Voor het afstuderen van mijn master Change Management schrijf ik een afstudeerscriptie over de implementatie van Dementia Care Mapping (DCM). Ik heb onderzoek gedaan naar persoonsgerichte zorg en naar de rol die DCM daarbij kan spelen. In mijn onderzoek ben ik op zoek naar factoren die implementatie van DCM wellicht bevorderen of tegenhouden. Ik hoop door middel van dit onderzoek een beeld te schetsen van de spelende mechanismen die van belang zijn voor een implementatie van DCM in de Nederlandse Verpleeghuiszorg.

Doel van het interview:

In de literatuur over implementaties van nieuwe methoden en processen in de zorg context zijn er een aantal factoren gevonden die van belang kunnen zijn tijdens het implementatie proces. Ik wil graag bij instellingen die DCM gebruiken, onderzoeken welke van die factoren uit de literatuur specifiek een rol spelen binnen de implementatie van DCM in Nederland. Ik zal per factor waarvan ik denk dat die van belang is voor de uitvoering van DCM een aantal vragen stellen. Die factoren zijn onderverdeeld in vijf categorieën met ieder een aantal onderwerpen, namelijk:

- *Karakteristieken van de interventie (DCM);*
- *De context van de Nederlandse ouderenzorg;*
- *Deze zorginstelling;*
- *Personen binnen deze context;*
- *Het proces van implementatie.*

Daarnaast zullen er waarschijnlijk andere aspecten ter sprake komen waar we nu nog niet aan hebben gedacht

Zijn er nog vragen voordat we met het interview beginnen?

Vragen ter introductie:

- Wat is uw huidige functie binnen …….. ?
- Hoe lang werkt u al bij ……. ?
    - En hoe lang als huidige functie? En wat heeft u hiervoor gedaan?
    - Om te beginnen ben ik erg benieuwd hoe het voor u is om met mensen met dementie te werken. Hoe ervaart u die taak?
- In hoeverre heeft u er mee te maken gehad?
- Wat was tijdens de implementatie van DCM uw functie?
- Had u naast de persoonlijke rol die u vervult nog een speciale functie met betrekking tot de implementatie van DCM?
    - Mits dit het geval is, welke?

Vragen over: *Karakteristieken van de interventie (DCM):*

Dit onderdeel van het interview zal gaan over de methode DCM en dan met name over eigenschappen van de methode en vragen over uw mening over DCM. Allereerst zou ik u willen vragen:
- Wat kunt u mij vertellen over DCM en wat is uw mening over DCM?

- Hoe is het om te werken met DCM?

- Wat vindt u van de kwaliteit van DCM?

Interventie bron:

1. Wie heeft besloten DCM te introduceren binnen de instelling?
2. Hoe ging dat beslissingsproces?

Kennis over de kwaliteit van DCM:

1. Wat was er bekend over DCM en over de potentie van DCM?
2. Wat hoort u om u heen over DCM van collega's, hoe staat men ertegenover?
3. Wat vinden collega's/ mensen met een vergelijkbare functie van DCM?
    a. Was er iets nodig om hen te overtuigen van de potentie van DCM?

Perceptie van DCM:

1. Wat vindt u van DCM?
2. Wat zijn voordelen van DCM volgens u?
    a. En wat zijn de voordelen ten opzichte van vergelijkbare methoden?
3. Wat zijn de nadelen van DCM volgens u
    a. En wat zijn de nadelen tegenover vergelijkbare methoden?

Geschiktheid van DCM:

1. Welke veranderingen zijn er volgens u nodig om DCM beter te laten werken hier?
    a. Denkt u dat het mogelijk is om dat ook daadwerkelijk te doen? Waarom?
2. Wie bepaalt welke veranderingen nodig zijn?
3. Is DCM getest of was er een testfase voor DCM?

Complexiteit van DCM:

1. Hoe complex of ingewikkeld is de methode DCM en wat maakt het dat?
    a. Wat maakt DCM complex voor u persoonlijk?

Het beslissingsproces om te kiezen voor DCM verliep goed

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Er was genoeg kennis aanwezig over de kwaliteit van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Ik sta volledig achter DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

DCM is zeer geschikt in deze instelling

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

DCM is zeer complex:

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Vragen over: ***De context van de Nederlandse ouderenzorg:***

Dit onderdeel van het interview zal gaan over de Nederlandse ouderenzorg in zijn algemeenheid en over persoonsgerichte zorg. Ten eerste:

- Wat kunt u mij vertellen over persoonsgerichte zorg en wat het voor u betekent?
- Wat is de rol van DCM voor persoonsgerichte in deze instelling of op deze afdeling?
- Wat heeft een grote rol gespeeld voor het kiezen voor DCM?

Persoonsgerichte zorg:

1. Wat is volgens u persoonsgerichte zorg?
2. Hoe wordt er binnen deze instelling gedacht over persoonsgerichte zorg?
3. In hoeverre werd persoonsgerichte zorg voorzien voor patiënten voordat DCM werd gebruikt?
    a. Heeft u voorbeelden?
4. Kent u specifieke ervaringen van patiënten die DCM ervaren hebben?

Extern beleid:

1. Zijn er richtlijnen van de overheid, wetgevingen of richtlijnen die de implementatie hebben beïnvloed?
2. Waren er financiële of andere stimulaties die het kiezen voor DCM hebben beïnvloed?

Er wordt hier veel aandacht gegeven aan persoonsgerichte zorg

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Voordat DCM werd gebruikt, werd hier persoonsgerichte zorg verleend

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Ik ken specifieke ervaringen van patiënten die DCM ervaren hebben

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Externe invloeden hebben de keuze voor DCM beïnvloed

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Vragen over: *Deze zorginstelling:*

Dit deel van het interview zal gaan over deze afdeling/ instelling. Een deel hiervan zal gaan over de organisatie van deze afdeling/instelling en een specifiek deel zal gaan over de implementatie van DCM. Met implementatie wordt in dit interview de invoering of het in werking stellen van DCM bedoeld. Ten eerste:

- Kunt u mij iets vertellen over deze specifieke afdeling/instelling en hoe het is om in deze instelling te werken?
- Wat kunt u mij vertellen over de werkrelatie met uw collega's?
- Wat kunt u mij vertellen over de communicatie met uw collega's
- Hoe ziet u deze specifieke instelling in relatie met DCM?
- Wat kunt u mij vertellen over de cultuur van deze instelling/afdeling

Structuur van de instelling:

1. Hoe beïnvloedt de infrastructuur van jullie instelling DCM?
    i. Wat is de rol van grootte denkt u?
    ii. En leeftijd?
    iii. Het beleid van de organisatie?
2. Zijn er veranderingen nodig in de structuur van jullie instelling?
    a. Welke veranderingen in beleid?
    b. Wie zijn er van belang voor die veranderingen?

Communicatie:

1. Kunt u uw werkrelatie met uw collega's omschrijven?
2. Hoe is de (werk)sfeer binnen het team?
3. Hoe is de sfeer met uw leidinggevenden?
4. Zijn er vaak vergaderingen en meetings?
    a. En hoeveel meetings en terugkoppelingen gericht aan DCM
5. Naar wie kunt u toe voor vragen, ideeën etc?
    a. Heeft u daar een voorbeeld van?

De manier waarop deze instelling is georganiseerd speelt een rol voor de invoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

De communicatie met collega's speelt een rol voor de uitvoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Trainingen spelen een rol voor de uitvoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Implementaties:
Het volgende deel van het interview zal gaan over één specifiek onderdeel: implementaties. Implementatie van DCM is het hoofdonderdeel van het onderzoek. Met implementatie wordt bedoeld: alle acties en processen om DCM in succesvol gebruik te krijgen.

- Wat kunt u mij vertellen over de reden waarom er hier voor DCM werd gekozen?
- Wat kunt u mij vertellen over de acties en processen om DCM in gebruik te krijgen in deze instelling/afdeling?
- Welke personen spelen een sleutelrol voor de implementatie van DCM volgens u?

1. Is er een noodzaak voor DCM?
2. Wat waren belangrijke redenen om DCM te implementeren?
3. Wie is volgens u het allerbelangrijkst voor succesvolle implementatie van DCM?
    a. Wat maakt het dat deze persoon in deze instelling dat is volgens u?
4. Hoe essentieel is DCM voor jullie om de zorg te kunnen verlenen die jullie willen?

5. Hoe past de implementatie van DCM binnen jullie organisatie?
6. Kan je beschrijven hoe DCM de 'normale' manier van werken aanvult?
7. Vervangt DCM een andere methode?

8. Heeft de implementatie van DCM prioriteit hier?
    a. Hoe is die prioriteit vergeleken andere implementaties?
    b. Welke activiteiten hebben volgens u de hoogste prioriteit in deze instelling?
9. Zijn er doelen gezet voor het succesvol implementeren van DCM in deze instelling?
    a. Worden die doelen en de voortgang bijgehouden?
    b. Wat is uw persoonlijke motivatie om DCM optimaal te laten werken?
10. Kunt u een verbetering die u heeft gemerkt van DCM beschrijven?

11. Wat is de rol van het management voor DCM?
12. Wat zijn dingen die het management heeft gedaan om DCM succesvol te maken?
13. Waar zou het management (of bestuur) in moeten voorzien om DCM beter te laten werken?

Training:

1. Wat voor soort training is er voor jullie?
    a. Hoe wordt die training ervaren?
2. Als er vragen zijn over DCM, bij wie kunt u dan terecht?

Er was hier noodzaak voor de invoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Voor het verlenen van persoonsgerichte zorg is DCM essentieel

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

DCM past bij onze instelling/afdeling

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

DCM heeft prioriteit in deze instelling

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Er zijn duidelijke doelen gesteld voor het implementatieproces van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Management speelt een duidelijke rol voor de invoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Trainingen zijn succesvol voor de invoering van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Vragen over: *Personen binnen deze context:*

Dit onderdeel van het interview zal gaan over de mensen die moeten werken in deze instelling met DCM en hun ervaringen met DCM.

- Wat heeft u gemerkt aan cliënten voor en na de toepassing van DCM?
- Kunt u omschrijven wat u persoonlijk gemerkt in uw dagelijks werk sinds het gebruik van DCM?
- Wat zou u kunnen doen om DCM een groter succes te maken?

Vragen over: *Het proces van implementatie:*

Dit deel van het onderdeel zal gaan over het proces en het verloop van DCM. Zaken als het verloop van de toepassing van DCM en in welke mate DCM leidt tot bijgestelde (persoonsgerichte zorg).

- Wat kunt u mij vertellen over de manier waarop het proces van uitvoering van DCM verloopt in deze instelling?
- Wat kunt u mij vertellen over het betrekken van de patiënt in het proces?
- Wat kunt u mij vertellen over de uitkomsten van DCM?

1. Wat was het plan voor de implementatie van DCM
    a. Hoe zag dat plan eruit?
2. Is er aan dat plan gehouden?
    a. Wat is er volgens plan gegaan?
    b. Wat is er NIET volgens plan gegaan?
3. Hoe wordt er over DCM geëvalueerd?
4. Hoe worden de resultaten van de evaluatie gebruikt?

Familieleden en mantelzorgers:

1. Hoe wordt er door u of door uw collega's met familieleden en mantelzorgers gecommuniceerd over DCM?
2. Op wat voor een manier worden zij betrokken bij het gebruik van DCM
3. Hoe ervaart u hun mening over DCM?

Er was een duidelijk plan voor de implementatie van DCM

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Er is goed aan het plan van implementatie gehouden

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

De patiënt wordt betrokken in het mapping proces

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Er wordt op goede wijze geëvalueerd over het DCM-proces

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

De resultaten van de evaluatie worden goed gebruikt binnen deze instelling

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Mantelzorgers/ familieleden worden betrokken bij het proces

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

De mening van mantelzorgers/ familieleden over het proces wordt meegenomen door de instelling

Niet	Nauwelijks	Neutraal	Aanwezig	In ruime mate

Afsluiting

1. Hoe heeft u het interview ervaren?
2. Zijn er nog onderwerpen die u graag wilt toevoegen of onderwerpen die niet ter sprake zijn gekomen?
3. Heeft u nog vragen of opmerkingen met betrekking tot het interview en het onderzoek?

Mantelzorger (extra):

1. In hoeverre ervaart u de zorg hier als persoonsgericht?
    a. In welke opzichten wel en in welke opzichten niet of minder?
    b. Wat kan beter?

2. Wat helpt voor het verzorgen van persoonsgerichte zorg volgens u?
    a. En wat staat het verzorgen van persoonsgericht werken volgens u in de weg?

3. Wordt de manier van zorg verlenen hier weleens bijgesteld?

4. Hoe probeert een medewerker van deze instelling inzicht te krijgen in hoe de patiënt zorg ervaart?

    a. Kan dit beter volgens u? En hoe zou u dit zien?

5. Hoe had de persoon in deze instelling, (of familie) vooraf volgens u bij kunnen dragen aan persoonsgerichte zorg in de instelling

6. In hoeverre wordt er rekening gehouden met de emoties en ervaringen van de oudere en diens familie/ mantelzorgers?

    a. Heeft u daar voorbeelden van?

7. Hoe wordt de geleverde zorg hier besproken met de mantelzorger en/of familie?

APPENDIX II: Invitation letter for respondents

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Groningen, 18 september 2017

Betreft: scriptie onderzoek ‘Implementatie en adoptie van de DCM-cyclus: ervaringen uit de praktijk’

Geachte heer/mevrouw [naam],

U ontvangt deze brief omdat uw instelling actief gebruik maakt van Dementia Care Mapping (DCM). In opdracht van DCM-Nederland ben ik vanuit het UMCG en de Rijksuniversiteit Groningen (RuG) een onderzoek gestart dat is gericht op de implementatie en het gebruik van DCM binnen verpleeghuizen in Nederland. Als masterstudent Change Management aan de RuG voer ik dit onderzoek uit in het kader van mijn afstudeerscriptie. Het doel van het onderzoek is te achterhalen welke randvoorwaarden en aanpak nodig zijn om ervoor te zorgen dat de invoering van DCM daadwerkelijk tot meer persoonsgerichte zorg leidt. En andersom; welke barrières staan een succesvol gebruik van DCM in de weg en hoe kan men daar mee omgaan?

Via deze brief vraag ik uw medewerking aan dit onderzoek. Gezien de ervaring met DCM binnen uw instelling, zou uw deelname aan het onderzoek zeer waardevol zijn. De gevraagde investering is beperkt en helpt een beter beeld te krijgen van verschillen in de wijze waarop DCM in Nederland is ingevoerd en wordt toegepast. Concreet verzoeken wij u om de mogelijkheid te bieden om drie interviews af te nemen bij enkele van uw collega’s. Vanzelfsprekend wordt uw anonimiteit als instelling en als geïnterviewde daarbij gewaarborgd.

Wij zouden graag de volgende personen interviewen: (1) een medewerker uit het management van uw instelling bekend met DCM, (2) een uitvoerder van de DCM-methode, (3) een verzorger bij jullie instelling en (4) een persoon die dichtbij een van de bewoners staat voor wie mapping is gebruikt. U kunt hierbij denken aan een familielid of andere mantelzorger. Elk interview kost maximaal een uur. Naast uw instelling benaderen wij vijf andere zorginstellingen die DCM gebruiken. Deelname geeft u inzicht in de toepassing van DCM binnen uw instelling in vergelijking met andere instellingen en kan aanknopingspunten bieden voor verbetering en verfijning. Daarnaast bieden de resultaten DCM-Nederland waardevolle aanknopingspunten voor de implementatie van DCM in instellingen.

Wanneer uw instelling besluit mee te werken aan dit onderzoek zal, naast de wetenschappelijke verslaglegging, een rapport voor uw eigen organisatie worden opgesteld waarin de invoering en het gebruik van DCM binnen uw instelling wordt vergeleken met de andere deelnemende, geanonimiseerde instellingen. Uiteraard worden alle gegevens vertrouwelijk behandeld en alleen gedeeld binnen het onderzoeksteam van de RuG. Met anderen worden alleen de geanonimiseerde resultaten gedeeld. De onderzoeksopzet is voorgelegd aan een ethische commissie.

Ik zal binnenkort telefonisch contact met u opnemen om uw reactie te vernemen. Dan kan ik desgewenst mijn motivatie voor deze studie en de achtergrond van het onderzoek verder toelichten. Indien uw instelling besluit aan dit onderzoek mee te werken, zou ik dan graag een afspraak maken om de interviews af te nemen.

Mocht u nu al vragen hebben of alvast willen reageren, u kunt mij telefonisch en per e-mail bereiken:
{eijkelenkampv@gmail.com en 06-20103338}

APPENDIX III: Codebook

Code actor:	**Interview respondent:**
FAC1(1)	Nurse
FAC1(2)	Informal Caregiver
FAC1(3)	Mapper
FAC1(4)	Project Leader
FAC2(1) 13	Team Manager
FAC2(2) 14	Head Nurse
FAC2(3) 15	Project Leader / Mapper
FAC3(1) 10	Informal Caregiver
FAC3(2) 11	Mapper
FAC3(3) 12	Team Manager
FAC4(1) 7	Head Nurse
FAC4(2) 8	Nurse
FAC4(3) 9	Director
FAC5(1) 6	Director
FAC5(2) 5	Mapper / Nurse

Category*	Concept*	Definition*	Quotes
Intervention Content	Adaptability DCM	The degree to which DCM can be adapted, tailored, refined, or reinvented to meet local needs.	FAC1(1): I would not know what I would do differently. You have to sit there and observe. FAC5(1): You just take position in a corner, somewhere you won't get noticed. You can not talk, but sometimes I can't help it.
	Complexity DCM	Perceived difficulty of DCM, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement.	FAC1(3): With the reporting it is very intensive, since we combine it with other tasks. It is very much energy consuming. FAC1(4): No, DCM is not complex. The colleagues that followed the course all passed. FAC4(2): It is complex to put someone in the living room with a resident. FAC4(3): I really see it as a change of culture, in that sense it is complex. FAC2(2): Complex if you see what people receive the trainings. What education they followed. FAC2(3):Very complex. It all falls and stands with the assurance. FAC2(3): DCM is complex, because PCC is a precondition.
	Cost DCM	Costs of DCM and costs associated with implementing, including investment, supply, and opportunity costs.	FAC5(2): Yes, it can be a disadvantage for many nursing homes since it is time consuming, but I don't see it that way, because it also saves time. FAC4(3): I think it is a costly decision we made. FAC4(3): Yes, especially because of the lost time costs. FAC3(2): They were constantly told there was no money and the project had to stop. FAC2(1): The training for mappers are costly. FAC2(3): Because of the costs in time and money we do group mappings.

	Knowledge of Evidence of Quality DCM	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the DCM will have desired outcomes.	FAC1(3): I understood it came from the U.K. to The Netherlands, yes. FAC1(4): DCM is a method from the university of Bradford. Actually, it is part of person centered care. FAC4(3): That's something you can do with DCM. Explaining and gaining understanding. FAC3(1): It is an observation method with which I agreed, the results. FAC2(1): That person from management knew people from England, and they introduced it here. FAC2(2): I was not really familiar with DCM, but I like it. It helps to see the person, which is more than just the disease. FAC2(3): It is a good tool when used correctly. It can help to find answers on preciously unanswered questions.
	Perception DCM	Stakeholders' perception of the advantage of implementing DCM versus an alternative solution.	FAC1(4): I think it is a good tool to give employees advise what to do with the client. FAC5(2): With DCM it becomes really objective, you can sell it if you know what I mean. FAC4(3): There are a lot of interventions when it comes to dementia, this is one and is relatively unknown. FAC3(2): Video was perceived more important. Now these two are going to work together. FAC3(3): DCM is more general. That is perceived less threatening than video observations. FAC2(2): What makes DCM important for me, is the fact that you at least need to choose one method, to see clients as more than a person with dementia.
	Purpose DCM	The reason and Purpose DCM is used	FAC1(1): I have to say DCM is being used when we have troubles, when something occurs with a resident. FAC1(3): Here DCM is mostly used to see where misunderstood behavior comes from. FAC1(4): Actually, it is part of person centered care and a method to make it measurable. FAC5(1): It is an enrichment for us to know the person even better. FAC4(3): It is like a heat and instead of pushing they said: We want this. FAC3(2): DCM is more used as handles and not for problems FAC2(3): We wanted something that really supports the employees and shows them what goes wrong and what goes according to plan. FAC2(3): For us it is a tool for assurance and repetition. A phenomenon that stays.
Outer Context	External Policy	External strategies to spread DCM including policy and regulations, recommendations and guidelines, pay-for-performance, collaborations, and public or benchmark reporting.	FAC1(4): Health care is provided via this method, the inspection, inspecting how care is practiced and executed. Therefore, DCM is chosen. FAC5(1): Inspection uses the SOFI method, which is similar to DCM. FAC4(1): I know there are some organizations that scored low on inspection resports. FAC4(3): Then the direct motive, a national client satisfaction survey. These three

			specific locations scored low on the benchmark. FAC4(3): What also stimulated was a financial impuls from the government. FAC2(2): We all really do what the inspection wants us to do. FAC2(3): We had a report from the inspection which was not positive.
	Need for PCC (inductive)	The extent to which the needs of the delivery of PCC, as well as barriers and facilitators to meet those needs, are accurately known and prioritized by the organization.	FAC1(3): We had the knowledge [of PCC], but it wasn't applied by the organization. FAC4(2): I think it will turn out to be like this, especially since dementia will become epidemic number one. FAC4(3): Also, the inspection told us it is important to get to know the person with dementia, as well as family. That is exactly what we are working at. It really matches. FAC2(2): The classical medical model is outdated. We don't listen to the general practitioner anymore. Well-being is hot and happening. It fits society more and the Dutch culture. FAC2(3): What we do now works: see what the client's needs are. While people thirty years ago worked task-oriented. They need to step out all of a sudden.
Inner Context	Structural Characteristics	The social architecture, age, size of an organization	FAC1(3): It is the intention everybody reads his emails. They are self-directing teams with their own responsibilities. That's also a downside when I have no response FAC1(4): A lot has changed. Not only DCM, but also the organizational change, the changing of organizational layers. FAC1(4): At the smaller location you notice higher involvement than at larger locations. FAC5(2): Very nice, a nice atmosphere and an involved team. Family sounds a bit, but sometimes it is. FAC5(1): We are really small you know, only fourteen residents. FAC4(1): So, there was a renovation at place. Literally debris came falling down. A lot of noise and every day we had to evacuate the clients. FAC3(2): That location is really different. Old fashioned nursing homes. Not the small-scale care like it is now. We are old school. FAC2(2): Care practitioners have more responsibilities now.
	Team Formation (inductive)	The formation of the teams involved with the implementation of DCM	FAC1(4): No temporary workers, not a lot of changes. I perceive that as bad for person centered care. FAC5(2): They do not open a can full of flex workers. And that makes the difference, especially towards the residents. FAC5(2): Because we have a small team, a clear vision. FAC4(1): Formation is not really in order. First the basic care practices have to be in place before you start. There has to be peace in the teams. FAC4(1): Formation has to be good: no flex workers or temporary employees. FAC4(1): Some teams have a lot of senior employees, they all have complaints. Their arm, hip, well, that.

			FAC4(2): I work at a department, it really runs well. A team composed of people from different locations. It works in perfect harmony. FAC3(2): We especially have people with a low education, which they followed more than twenty years ago. FAC3(3): For some teams it is a nice contribution. At other teams I think: you can present matrices and tables, but first some other stuff has to happen.
	Networks & Communication	The nature and quality of webs of social networks, and the nature and quality of formal and informal communications within an organization.	FAC1(3): First of all: Making contact. I send mails when I arrive and sometimes I get no response. How hard is it to answer my mails? FAC1(4): Normally every month. They have meetings with the team and the manager. But they are autonomous teams. For questions they reach out to the manager. FAC5(2): We have five big team meetings every year. Because the farm is separated in a group of eight and a group of six. So, this way we can have sort of an intervision. FAC5(1): If we notice something that is worrisome, we call the case manager. FAC4(1): The new manager? The new manager is a bit more amicable. Employees can get their thought off mind. FAC4(2): If there has been a meeting, it should eventually come to us. Via records. That is information everybody needs, so it has to be communicated to us. FAC3(2): It is one big family. Our boss was always approachable. Everything could be said. With colleagues as well. FAC2(1): You can bring it really top down, like an assignment, but that does not work here. From the gut feeling, that is what works here. FAC2(2): Communication is ok. We are informed about budgets, how much we have, what we want, etc. FAC2(2): It really has to do with a certain degree of open dialogue culture
	Culture	Norms, values, and basic assumptions of a given organization.	FAC1(3): At this location, the culture is a bit surly. We do it our way and that's the only way to do it. FAC1(4): To choose means to say 'no' as well. That is really hard. Many say 'yes'. FAC5(2): We are the opposite of task oriented. We don't have a clock, it's just like back home. FAC4(1): We have a culture with especially a lot of gossiping. FAC4(3): You can use person centered care to realize a cultural change, but on the other hand you need a fundament of person centered care to make it stick. FAC2(1): The flower of person centered care. You need to see it everywhere. FAC2(2): Also, culture. How important is the well-being of a client for you? FAC2(3): There are many cultural differences. Sometimes between different nursing homes in the same village. FAC2(3): Everybody knows each other, a closed society. With their own culture, and therefore own culture of learning.

			FAC2(3): We do not have a culture that promotes open dialogue.
	Integration of Family Members (inductive)	The degree of integration of information, knowledge and records about a client in the delivery of PCC and the delivery of DCM in the organization	FAC1(2): I really cannot tell you about the method. All I can tell you is my experiences with the clients. FAC1(3): Family did have information session, but they didn't prepare enough, so they don't know enough. FAC5(2): When somebody moves in, first we try to collect as much information as possible via an extensive intake. We ask a lot about many topics. FAC4(1): In fact, we ask a lot of family members. If something is unclear, we ask family. FAC4(2): I do not think family knows what [DCM] is, no. FAC3(1): No not, up front. But they did show me the results of the mapping and this was discussed.

Category	Concept	Definition	Sub concept	Definition	Quote
Inner Context	Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to DCM, and the extent to which use of DCM will be rewarded, supported, and expected within their organization.	Tension for Change.	The degree to which stakeholders perceive the current situation as intolerable or needing change.	FAC1(1): I don't want to say it was that did it. Society, more and more people with dementia and more and more attention. FAC1(3): They do not really know what DCM is and what the benefits of DCM are. FAC1(4): Employees say do not have the time, or that they already perform their tasks like that. FAC4(2): I think more than 90% know that person centered care is the future. FAC3(2): Something really had to change, which they did. FAC2(1): I think my colleagues are not involved enough. Managers are led by the troubles the day brings them.
			Compatibility	The degree of tangible fit between meaning and values attached to DCM by involved individuals, how those align with individuals'	FAC1(3): And then I notice resistance. They think: why are you interfering with our work? At least, that is the feeling I get. Or they think I do not know the people they work with. What do you know about it? FAC1(3): In relation with person centered care it is difficult, or

				own norms, values, and perceived risks and needs, and how DCM fits with existing workflows and systems.	they just do not want to invest time. FAC1(4): Some think it is a waste of time, because somebody is sitting there for more than six hours. Pressure is already very high, and when somebody sits there for six hours, they could also help caregiving. FAC5(2): The faith it was me sitting there. A familiar face, that really helps. FAC4(1): It does not really have a disadvantage, although, to make the team see the purpose takes really long. Work pressure is already really high. FAC4(3): We said: 'Before implementing DCM we need person centered care related training'. FAC3(2): The living rooms were build there. But people did not know how to do that. All of a sudden, they have to cook. They were not used to that. FAC2(3): Locations that indicate they need to do other things first, or that they have a project. We tell them it is not the time to do both. FAC2(3): DCM is very complex. Everything depends on implementation and the assurance
			Relative Priority	Individuals' shared perception of the importance of DCM within the organization.	FAC1(4): If there are indications hygiene is not as it should be, then that has the primary focus. Eventually, this leads to absenteeism. FAC1(4): Not enough was invested. What if all the managers just said: We invest time in this and leave other tasks. FAC5(2): I think it is really essential. You can achieve so many

					things with small adjustments. FAC5(1): It also is part of our multidisciplinary meetings. FAC4(1): Like I said: half of the program was not chosen. Only training trajectories. FAC4(2): There was some resistance, not everybody showed up at the meetings. It was all very intensive. FAC3(2): It should have more [priority]. To keep it running, without all the breaks. That is not our task, but from higher hand. FAC2(1): It has priority and it is perceived important, but like I said, the execution is not sufficient. FAC2(3): Training for Person centered care has top priority. DCM follows.
			Goals & Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff, and alignment of that feedback with goals.	FAC1(1): At meetings we discuss DCM, but only when it is brought to attention. FAC1(3): Clear goals? Hardly. Especially for employees. Teams do not invest enough in: 'What do we want to achieve this year'. FAC1(4): Trajectories are put in place but insufficiently tested whether effect is achieved. FAC5(2): We have daily team transfers of half an hour. Those are moments we reflect on what happened during the day. FAC4(2): If something works, you write it down in the report. This will consequently be discussed at the team meeting. FAC3(2): We did to the feedback sessions. But when that was completed, we just

					went on with our daily tasks.
	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement DCM.	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation of DCM.	FAC1(1): Our manager knows, but I do not have the feeling something is done with it. FAC1(4): Nobody is dominant. That is felt by employees. FAC5(2): If the manager is not on a frequent basis on the work floor, you do not feel the atmosphere. FAC4(2): Also the trainer said she had the feeling something was wrong with management. FAC3(2): There was real good relation with the team manager. FAC3(3): As a manager you have to chase it. That really is something you have to do as a manager. Ask about tasks, whether they are executed yet. FAC2(3): If the board not even knows what Person-centered care is? That really shocked me! FAC2(3): I think a team manager always needs to be present. Otherwise the perceived need for employees to work for it is really low. FAC2(3): Many times, there was no team manager at the feedback session.
			Employee Engagement	Commitment, involvement, and accountability of employees with the implementation of DCM.	FAC1(4): Not showing up at meetings. We have no time is what they say. Not showing up planned feedback sessions. FAC5(2): Colleagues also ask: Do you want to take a look at it? What can we improve? FAC5(1): Involvement is really high, employees too. Everybody is part of the team.

					FAC4(2): People working in health care are only motivated if they see it has a practical benefit for them. FAC4(3): First you assume people are interested. Then you see this is not the case at all. FAC3(2): Some are really old school. They keep holding on to old habits and they just do not want to change, especially in a nursing home. FAC2(2): It is a shame they do not show initiative. That is not really the case here, but it will come. FAC2(3): Change is not really accepted in this group. Extra notable employees want to join in.
			Available Resources	The level of resources dedicated for implementation and on-going operations including physical space and time.	FAC1(1): I think we have too many tasks and it keeps adding. Field of attention for this, field of attention for that. FAC1(3): In relation with person centered care it is hard, they do not want to invest time. FAC1(3): Then I would say: funds. It costs time and money to do it. If the organization says: 'We stop investing', DCM will stop. FAC5(1): I think it can work everywhere, but what you always see is the personnel utilization. FAC4(3): Because of the extra funding we had the possibility to do it.
			Awareness of Organizational Vision	Awareness of Organizational Vision to deliver PCC with DCM	FAC1(3): At that location I see a lot of resistance. Well, maybe not resistance, but people doubt the utility. FAC1(4): They see it as something that adds, not something that helps to improve. FAC5(2): No, and I think it also really

					helps we all follow our vision. FAC4(2): Colleagues know we have it, but really vividly, no. FAC3(3): Not everybody. Always some employees resist. They think it is nonsense. FAC3: What I would like to see, is that people are more on the same level. To see the meaning of it. FAC2(1): They want it in the vision, person centered care. This is definitely not the case.
			Access to Knowledge & Information	Ease of access to digestible information and knowledge about DCM and how to incorporate DCM into work tasks.	FAC1(1): For questions I can always go to the psychologist. FAC5(2): By explaining what we did, things went according plan pretty fast. FAC5(1): We gave a presentation for the complete team. What do you know and what do you remember? FAC4(1): They knew they could ask me, also the theoretical part. When it became too hard, I was there to explain it. FAC4(2): There are many courses, trainings, whatever you want. Constantly. FAC4(3): We have a digital learning platform. We also developed content. We even benchmarked the knowledge about dementia. FAC3(1): I received a flyer from the team leader about the observation method. FAC3(2): The organization provided education. Once in a while you have to do a course, online. FAC3(3): We just started the training method misunderstood behavior with the

					team leaders and management. FAC2(2): Practical examples are necessary. Not in language. Information is not always delivered and that is a shame.

Category	Concept	Definition	Quotes
Characteristics of Individuals	Knowledge & Belief about DCM (inductive)	Individuals' attitudes towards and value placed on DCM. Furthermore, familiarity with the facts, truths and principles of DCM	FAC1(3): As I see it now, it is an instrument to see the person with dementia as an individual and that you can give feedback about what really happens. FAC3(2): DCM especially shows you what you should not do. I think that is important.
	Individual Stage of Change	Characterization of the phase an individual is in, as she/he progresses toward skilled, enthusiastic, and sustained use of DCM	FAC5(1): In my opinion, we should do a mapping every single year. Only then it stays up to date and only then you can compare. FAC4(1): It is an investment, but it is an investment that really contributes. FAC3(2): More education and more training, so we can do mappings on more locations. I believe for 200% in DCM and I really hope we are going to have many positive results because of it.
	Individual Training Perception (inductive)	Characterization of the perception an individual has in of training provided in the organization which is related to the implementation of DCM and PCC	FAC1(1): All this time we have to spend for training. Is that necessary? We already have so many tasks, let us do our job with the clients and spend time with them! FAC4(2): Training, yes, they are available, but not for every moment and every type of colleague. FAC2(2): Practical examples are good and necessary. However, practical and not in a spoken way. An assignment. I am really happy we have an assignment.
	Individual Perception of PCC (inductive)	Characterization of the perception an individual has as s/he works in a context of PCC	FAC3(3): It is not necessarily in big things. It can also be something small like some nice classical music in her room. FAC4(2): Letting people live worthy. Respect for their background and everything that goes along with it.
	Individual Identification with the Organization	A broad construct related to how individuals perceive the organization, and their relationship and degree of commitment with that organization.	FAC1(2): The organization helps me, and therefore I can perform my task. Otherwise I would not have stayed, I don't think so. FAC2(2): This really happens like everything happens on this location and I think that is a shame, it really is.
	Self-Efficacy	Individual belief in their own capabilities to execute courses of	FAC4(1): Management was not always there, why I was. I had the time to get to know the employees. FAC3(2): Everything has a code, even this. You start remembering them once you are

		action to achieve implementation goals.	using them, but you really have to keep doing that. FAC3(2): The mapper has a real big part, which I to be honest find really hard.
	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.	FAC5(2): I think that part has to be in you. That part of empathy, you really need it. FAC4(2): Responsibility? No. Let me just be the nurse, that is enough. FAC3(3): Be creative, come with solutions. Could this be something, or this? That differs with every employee. They were never thought in this stuff.

Category	Concept	Definition	Sub concept	Definition	Quote
Process of Implementation	Planning	The degree to which scheme or method of behavior and task for DCM implementation is developed in advance and the quality of those schemes	-	-	FAC1(3): Planning was we did twice a year for every location a mapping. This was never accomplished. FAC1(4): For the pilot we developed a Planning and some goals. FAC3(2): We tried to do a location every six months. Eventually, we did not follow these plans.
	Engaging	Attracting and involving appropriate individuals in the implementation of DCM	Opinion Leaders	Individuals in an organization that have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing DCM.	FAC1(4): If managers cannot motivate the rest of the team to come, things will lead a life of its own. They set an example for the rest of the team. FAC4(1): Management not in the picture. You know, we feel ignored. FAC4(3): For me, an important precondition was the attendance of the team manager at the training.
			Formally Appointed Internal Implementation Leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing DCM as coordinator, project manager, team	FAC4(3): We have a program committee consisting of direction, trainer and the project leader, to design the implementation. FAC2(3): I have been involved with the project by giving the sign when to start with implementation.

				leader, or another similar role.	
			Champions	Individuals who dedicate themselves to supporting, marketing, and 'driving through' DCM, overcoming indifference or resistance that the innovation may provoke.	FAC3(1): I really am an ambassador for DCM. FAC3(3): Actually, we see the mappers as ambassadors. FAC1(3): How I see it now, it was the trainer that really influenced everybody. She's got it in her to get everybody onboard.
			External Change Agents	Individuals who are affiliated with an outside entity that facilitates DCM.	FAC1(3): DCM Netherlands was invited then, because after observations you have to make the reports. We found the reporting very difficult.
	Execution	Carrying out or accomplishing DCM according to plan.			FAC1(4): They dealt with it very optional. People did not show up. They planned the meeting, but the teams just did not come. FAC3(2): The appointments we made about the locations and the mappings. That is what we actually did.
	DCM Process Components (inductive)	Mappers training, reporting and feedback of DCM results.			FAC1(3): A while ago, we communicated with all the employees at the team meeting. It is possible they forgot about it. FAC1(3): I also noticed a lot of colleagues are afraid to be observed. So we spend a lot of time explaining. To explain it is not an instrument to control employees, but to improve the well-being of clients. FAC4(3): As a mapper, you have no power. So your story is all you have. Without a stage, that becomes really hard to do. Crucial. FAC3(2): To make it positive, that is really

					hard. When something went wrong in a nursing home, or just a bad day.
	Reflecting & Evaluating.	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.			FAC1(1): This is the first time we have a meeting especially to reflect a mapping. Normally a meeting is two hours, with a small part for DCM. FAC2(1): No we did not have a meeting like that yet. We have to plan a meeting. Until the half of January we give these trainings and then we start the evaluation process.

** This codebook is derived from the CFIR by Damschroder et al. (2009) and adapted for this research purposes.*